AVIATION

The Oldest American Aeronautical Magazine

September 15, 1928 | Issued Weekly | PRICE 20 CENTS

Flight picture of a Curtiss "Robin" powered with a Curtiss "Challenger" engine.

VOLUME XXV

NUMBER 12

Special Features

The "New Standard"
The Croydon Airport
Notes on Airplane Tail Surfaces

AVIATION PUBLISHING CORPORATION
250 WEST 57TH STREET, NEW YORK

Entered as second class matter July 27, 1928, at the post office at New York, N. Y., under the act of March 5, 1879. Yearly subscription rates. Domestic, $4; Canada, $5. All other countries, $6.

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The Oldest American Aeronautical Magazine

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Vol. XXV *September 15, 1928* No. 12

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AVIATION PUBLISHING CORPORATION
Business and Editorial Offices
250 West 57th Street, New York City
Cable Address. AEROENG

Publication Office New York, New York

Subscription price Four dollars per year Canada, five dollars Foreign six dollars. Single current copies twenty cents Back numbers 25 cents Advertising rates on application. Issued every Saturday Forms close eight days previously Entered as second class matter July 27, 1928, at the post office at N Y., under the act of March 3, 1879 Copyright 1928 by Aviation Pub. Corp

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Vol. XXV | *SEPTEMBER 15, 1928* | No. 12

No Easy Money

THE almost unprecedented development of the aeronautical industry since Lindbergh's famous flight has attracted all kinds and types of people to the fold Some are members of the "old guard" who had been forced to quit through lack of being unable to make both ends meet, and now desire to return to their first love, some are those who have been interested in aeronautics from the start, but have been otherwise engaged, and the others are those who believe that aeronautics is a second Klondike and that they should get in quick and reap the "golden harvest" with a minimum of effort

Figuratively speaking, there is a golden harvest in aeronautics, and there will continue to be for those who survive the "rush" and carry on in business But it is not there for the taking To make money in aeronautics today, as in time to come, takes experience, knowledge and ability Aeronautics is now an industry and like any other industry will attain success by the application of sound business principles Competition is becoming more keen each day, and the successful individual is the one who is a specialist in his own particular calling, whether it be cost accounting, traffic managing, manufacturing, selling, or piloting, etc There is room for new comers, but they must have something of value to give in return for what they receive It has been estimated that actual piloting is but 10 per cent of aeronautics That leaves 90 per cent for the man who does not care to make piloting his livelihood However, that 90 per cent must be handled, and will be handled, by those who know their jobs, and not by those who decide that they will take up aeronautics just because it looks like easy money

Safety Precautions

THERE still remains a considerable amount of work to be done as regards educating the non-flying public in the matter of personal safety at a flying field This fact was proven most conclusively during the recent starts of the coast to coast air derbies from Roosevelt Field, Long Island

There were 37 planes that took off at one minute intervals in the Class A race, and 37 times the police and contest committee officials had to virtually hurl the spectators back so that the planes could take off without injuring anyone As it was, it was little less than a miracle that some man, woman or child was not clipped by a spinning propeller or bowled over by a wing-tip as the plane gathered speed At the start of the Class B and Class C races conditions were somewhat better, but there were still those persons who insisted on practically crawling all over the planes as they started off

As has been mentioned several times in these columns, a whirling propeller is something which one must keep clear of at all times, and it is up to all of us to impress this fact upon the public Many fields are being enclosed and it is impossible for one to get near a plane's propeller, but there are still many fields that are open on all sides, and when such an event as a trans-continental race is being held it is a foregone conclusion that the spectators (including relatives and friends of the racers) will strive to get as close to a particular plane to wish its pilot good luck and good speed Such actions are not only unsafe for the spectator, but exceedingly annoying to the pilot, who has enough to think about without worrying whether someone is stepping into his propeller or hanging onto a wing

As an absolute precaution against this sort of thing it might be advisable for contest committees to establish danger lines around the borders of the area in which the planes will take off and arrange with the local police to prevent all persons, other than identified contest committee officials, to go beyond the danger lines This ruling might include newspaper camera men also, for they seem to have a habit of setting up their camera tripods directly in front of the take off, and then scurrying to cover with a slit second to spare

Selling the Lady

MANY and varied have been the comparisons made between the automobile industry and the airplane industry As an additional comparison it might be stated that as the automobile salesman sells the lady of the house, so should the airplane salesman sell the lady of the house

It is a well known fact that the married man ascertains the opinions of his wife when buying a new car And rightly so, for she will undoubtedly drive it, or at least ride in it If she is to drive it she will want to be able to do so with a maximum of pleasure She will want a car which will not cover her with dirt and oil, and she will also want a car which will handle easily in traffic and on the open road Incidentally, the lady of the house usually has her own ideas on colors and trimmings

Of course, very few are having anything to do with the buying of airplanes at present. But such a time does not seem far distant, and when it arrives those same sales items will make themselves conspicuous The manufacturer who produces a plane "for the lady to fly" appropriately finished, completely equipped with a self-starter, which can be operated from the cockpit, and some of the appliances as found on the modern car, will stand a good chance of increasing his sales provided his selling force, distributors and dealers bear in mind the fact that the lady must be sold as well as the man

The "New Standard"

A Five Passenger Open Cockpit Sesquiplane Powered With a 180 Hp. Wright Hispano Engine

By Leslie E. Neville

IN order to meet the demand for a new production plane comparable in utility to the old five place Standard J-1, the Gates-Day Aircraft Corp., of Paterson, N. J., has developed the "New Standard" The GD 24, as it is designated by the manufacturer, is a five place, open cockpit sesquiplane embodying several unusual construction features, the most interesting of these being found in the fuselage which is built entirely of open section duralumin members riveted together The first plane is powered with a 180 hp Wright Hispano engine but provision has been made in the design to use other power plants up to 450 hp It is expected that the second plane will have a Wright "Whirlwind" engine

The New Standard was designed by Charles Healey Day, well known aeronautical engineer, who designed and built the first Standard J-1 airplane nearly twenty years ago, and is credited with the invention of the first tractor biplane In his most recent work he was assisted by Rostislaw S Komarnitsky, whose previous engineering experience in Europe made it possible to incorporate many design principles used in foreign planes Mr Day was also aided materially by the advice of Ivan R Gates

Following the test flight of the first New Standard production was started at the Gates-Day plant on a group of ten planes A number of special jigs have been constructed and special machines including heat treating apparatus have been installed

In the experimental flights conducted by Clyde Pangborn, test pilot of the Company, the New Standard exceeded the expectations of the designers With full load the plane attained a maximum speed of 115 m p h and proved to have a cruising speed of 95 m p h and a landing speed of less than 35 m p h In the tests the plane took off with full load in 9.5 sec and climbed 1200 ft. in 47 sec. after the take off. While no figures are as yet available for ceiling, it is expected that at least 18,000 ft will be attained with full load The gliding angle is very high and is estimated approximately at 1 in 10.

Rear view of the Gates-Day "GD-24"

One of the features of the plane is its flexibility of control This is partly due to the fact that the disposable load is located almost directly over the center of pressure By this provision the plane may be handled whether loaded to capacity or carrying the pilot alone

In appearance the New Standard is characterized by its large gap, great stagger and tapered wings The six foot gap contributes to the aerodynamic efficiency of the plane and decreases the angularity of the interplane bracing wires due to the stagger, which is 26½ deg It also facilitates entering and leaving the cockpits by affording ample headroom for a person standing upright on the lower wing The plane has an upper wing span of 45 ft, an overall length of 26 ft and an overall height of 11

Front quarter view of the Gates-Day "New Standard."

ft The upper wing has a dihedral of 0 deg and that of the lower is 2 deg. Both wings are rigged at 0 deg incidence. Stock models will be finished with maroon fuselage and silver wings and tail surfaces.

The Gottingen 533 airfoil section is used and the wings are of constant chord, thickness and section for approximately two thirds of the semi-span The remaining tip sections are of modified section and tapered in both plan and thickness Because of the taper and washout of the wings, which reduces the induced drag losses resulting from tip vortices, a maximum L/D of 23.5 is obtained.

View of fuselage construction of the "New Standard," showing riveted duralumin members.

It is stated by the designers that this value would be only 16 if the original section were used throughout The general shape of the wing also produces elliptical load distribution along the span The upper wing is divided but has no center section

Wing construction is conventional, utilizing five piece "I" beam spruce spars and combined plywood and basswood ribs covered with fabric except for the ailerons which have plywood covering on both top and bottom. In tests the ribs withstood 900 lb compression load Leading edges are of water proof plywood and trailing edges of heat treated duralumin The ailerons, being located partly in the tapered section of the upper wing panels, are hinged to a false spar which is attached at its mid-point to the rear spar The position of the ailerons gives them both dihedral and washout Double piano wire is used in the internal bracing of the wings, which have seven bays in each upper, and four in each lower panel Six coats of dope are applied to the finished wing panels, the first four being clear and the last two semi-pigmented The weight of a completed upper wing panel is 120 lb

N-type steamlined interplane and cabane struts are used and each member of the system is attached by a separate fitting The chrome molybdenum steel tubing used in the interplane struts is 1½ in in diameter, 20 gauge That of the cabane struts is 1¼ in in diameter, 18 gauge Double streamline wires, used in the external bracing, are located in the plane of the spars, reducing the possibility of eccentric loading

As previously mentioned, the fuselage, which is rectangular in section, is built entirely of heat treated duralumin members of standard section, such as angles, channels and ties, riveted or bolted together The duralumin rivets are 5/16 in in diameter and like the fuselage members are carefully heat treated at the Gates-Day plant A large number of rivets are used and no important joint has less than six. Longerons are of angle section 1½ in wide on each side and ⅛ in thick and are reenforced by doubling through a part of the section containing the cockpits. All other angle members of the structure are either 1¼x1¼x⅛ in. or 1x1x1/10 in and, by carrying a few lengths of these three sizes of stock and the necessary rivets, repairs can be made at almost any time or place without special equipment Wire bracing is employed for additional reenforcement at several points in the tail As no closed sections are used in the fuselage proper it is an easy matter to make inspection of the structure and no members can be weakened by hidden decay This feature also provides a more resilient structure than one built of closed section members The turtle deck is built entirely of spruce and, with the fuselage is fabric covered Side covering is laced to the longerons so as to be easily removable The fuselage complete less landing gear, engine mounting and empennage, weighs 360 lb

The engine mounting is built of welded chrome molybdenum steel tubing with gusset plates at the junctions of all compression members and is so designed that the loss of any one of the supporting members would not cause the framework to collapse under the load The engine is bolted to the 1½ in. tubular bearers through hardwood bed blocks and the entire mounting structure is detachable by the removal of four bolts When water cooled engines are used a cartridge core radiator is attached to the engine mounting members just under the nose The members to which it is fastened are inclined at an angle of approximately 45 deg., placing the radiator in such a position that it cannot be damaged in the event of nosing over

Landing gear is of the "V" type and has an eight foot tread to afford ample stability in landing and taxiing It is constructed of chrome molybdenum steel tubing,

Uncovered rear section of the fuselage showing the installation of the steerable tail skid and adjustable stabilizer unit

faired with balsa and wrapped with fabric and doped Compression struts are attached to the upper longerons and the shock absorbing mechanism consists of 26 rubber discs Oleo struts may be supplied as special equipment Wire wheels with 32x6 in Goodyear rubber tires are used

Another factor which contributes to the ease of maneuvering on the ground is the steerable tail skid, which em-

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The Guggenheim Airway Meteorological Service

By Horace R. Byers
Assistant in Charge

With air transportation developing as a competitor of the long established means of travel, and seeking to assert itself as a safe and reliable, as well as a rapid, transport service, it is of vital importance that something be done to aid in placing it upon a basis of safety and dependability.

The plane entered the field of transportation at a comparatively late stage, when methods of travel established at an earlier period had reached a high degree of perfection. The previously existing carriers have offered dependable schedules, and the maximum in safety, at surprisingly low costs. It is up to the air transport companies to do the same, if it is hoped to develop air travel on a sound basis.

It is upon weather conditions and the reception of accurate weather reports, that the safety of a plane, traveling over any given route, depends in a large measure. Before departing on a trip, a pilot should know of the weather conditions he will encounter. He must be warned of any dangers that may exist, and should be advised as to what course to follow to avoid hazardous conditions. In the interest of efficiency in operation and the maintenance of a proper schedule, he should be advised as to what levels he should fly in order to take advantage of the most favorable winds. Also, while in flight, the pilot should be notified of conditions by central weather offices, either by means of radio or ground signals placed at strategic points.

Present Stations Widely Scattered

The regular twice daily weather reports of the U. S. Weather Bureau are of little direct help to him, although the government is now establishing a much more complete service along the more important airways. The original network of stations of the government bureau was established many years ago with no thought of serving air transportation services which then hardly were dreamed of. The stations are too widely scattered, and the twice a day reports come at intervals too great to make the data of any real assistance. Especially is this emphasized, when it is realized that it is such local weather phenomena as fog, thunderstorms, squalls and poor visibility, that are of the greatest consequence to air travel.

Suppose you are a pilot, ready to start on a flight from Omaha to Chicago, and there is no meteorological organization able to tell you what conditions you will encounter. Your first impulse would be to call up several stations along the route and inquire of the personnel there about the weather. That is the kind of weather reporting the Post Office Department had when it developed the transcontinental air mail line. Almost every commercial air line has some special system for securing weather information, principally along the actual route to be flown.

However, these strings of weather observing stations on the airways do not offer adequate protection against unexpected bad weather, such as local thunderstorms in the summer, which may drift with the wind across the course and come as a complete surprise to the pilot, if he is relying solely upon reports along the actual line of flight. Therefore, in order to have a complete weather

A map drawing of central California showing the distribution of the observation stations.

reporting service, it is necessary to have a dense network of observation points both along and off the regular airway to indicate movements of various phenomena, and to show the way clear over alternate routes when the regular airway is dangerous.

Realizing this, the Daniel Guggenheim Fund for the Promotion of Aeronautics established the Experimental Meteorological Service along the San Francisco-Oakland-Los Angeles airway. The service is being conducted as an experiment. It is the hope, if it proves a success, that it will serve as a model for establishing a complete airway meteorological service by the federal government.

Thirty-six weather reporting stations were established in southern and central California from the ocean to the Sierra Nevadas. Practically all of them started making observations and reports last May. The distribution of these stations is shown in an accompanying illustration. Dr. Carl-Gustaf Rossby, who has had many years study and experience in meteorology, both in Europe and America, and who is chairman of the Fund's Committee on Meteorology, was placed in direct charge.

In the San Francisco Bay region there are seven observation points. These are at Crissy Field, Mills Field, Palo Alto, San Pablo, Concord, Oakland and Livermore. There are but three in the Santa Clara and San Benito valleys. These are situated in San Jose, Gilroy and Hollister. Along the coast, there are four observation points. One is located at Salinas, another at King City, the third at San Luis Obispo and the fourth at Santa Barbara. Sacramento, Modesto, Merced, Fresno, Visalia and Bakersfield were the points selected on the east side of the Great Valley, while on the west side the points chosen were Tracy, Los Bancos, Mendota, Coalinga, Los Hills and Taft. In the Tehachapi mountains, the observations are made at Grapevine, Lebec and Sandberg. There are four posts south of the ridge. These are at Newhall, San Fernando, Griffith Park and Vail Field.

In addition, special reports are received from Mount Hamilton, overlooking central California; Mount Wilson, overlooking southern California; Frazier Mountain and Tejon Pass in the Tehachapi Mountains and the Newhall Lookout, overlooking the passes leading into Los Angeles.

Reports by Long Distance Telephone

The regular reports are received by long distance telephone at the two terminals—Oakland Airport and Vail Field. The method of obtaining these reports is by a system of making telephone calls. All of the stations are called by the telephone operator, one after the other, without making it necessary for the person collecting the reports to ask for all the numbers. In other words, the telephone operator has a list of all the stations to be called. While the Oakland collecting observer is talking to Modesto, for instance, the telephone operator is building up a line to King City. As soon as the Modesto observer hangs up his telephone receiver, the King City observer is on the line ready to give his report.

Under this system, the two terminal offices between them can collect the station reports in as short a time as seven minutes.

The observations are made simultaneously at all stations at 8 A. M., 9:30 A. M., 11 A. M., 12:30 A. M. and 3:30 P. M. The night observations, under the supervision of the weather bureau, are made at 11 P. M. and 2 A. M. These hours form the skeleton of regular report intervals of 90 min., which, as the demand for observations increases, will be continuous throughout the day and night.

A system of "printer-telegraph" machines connects Vail Field, Fresno, Bakersfield and Oakland. The reports are transmitted from one terminal to the other as soon as they are received. This also makes the weather information available at Fresno and Bakersfield, the principal stopping places on the route from Los Angeles to San Francisco. At Los Angeles, and in the San Francico Bay region, several fields are used by commercial lines as their terminals. To take care of the demands of these companies, receiving machines are installed at the airports. The reports are telephoned at present to the Army Air Service of the Ninth Corps Area at Crissy Field, but efforts are being made to have a receiving machine installed there also.

It will be noticed that the stations are located closer together in the hilly and mountainous regions, especially where the airway nears the coast, where local variations in weather conditions are very great, and where reports of ceiling and visibility are of the greatest importance. High fogs occurs practically every day during summer on the California coast. The stations along the coast keep close watch of the fog situation, and report its height above the ground, or any signs of its breaking up. The mountain stations report the height of the fog at the top so the pilot may know how much climbing will be neces-

Shaded section indicates typical distribution of high fog in Central California. (Early summer morning.)

sary to clear it. The mountain stations also are able to report local phenomena, which may escape the attention of the stations in the regular network, such as local breaks in the fog, or fog far out at sea.

A system of ground signals to warn the pilot while in flight of dangerous conditions or of changes of importance that have occurred since the departure of the plane, are being developed rapidly. A group signal system at Bakersfield, to notify pilots, who do not care to stop there unless necessary, of conditions over and south of the Tehachapi Mountains, has been in operation since the inauguration of the service. The U. S. Weather Bureau and the Department of Commerce are co-operating in establishing a similar, but more elaborate signal at Livermore, the entrance to the bay district. This latter signal will be lighted at night for the benefit of the northbound air mail and newspaper planes.

To give a better picture of how this service is of use to the pilot, we can cite a few examples. A high fog recently covered the entire coast of central California, including the coastal valleys. Along the ocean shore the fog was on the ground. Our regular stations reported the fog at about 400 ft. above the sea level inland. Mount Hamilton reported the top of the fog layer at 2,500 ft. This informed the pilots immediately, that in order to clear the fog, they must climb up through 2,000 ft. of it, something which one will hesitate to do in this area owing to

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Notes on Airplane Tail Surfaces

By C. L. Ofenstein
Aeronautical Engineer, Department of Commerce

A SHORT time ago a Department of Commerce inspector was flying in a new type plane with its designer and builder. Looking back the inspector noticed the tail vibrating violently. Tapping the designer on the shoulder, he said, "How about that tail?" The designer replied, "I am going to fix that on my next plane." The inspector had grave doubts as to whether or not there would be a "next plane." However, they came down safely.

Excessive tail vibration has been traced, in at least one instance, to the fact that the elevators had separate torque tubes. Due to a difference in the tension in the control cables, the separate elevators were enabled to work up and down until serious vibration of the whole tail resulted. This was remedied by connecting the torque tubes by a steel sleeve, which was bolted in place. It is, therefore, a good thing to remember that the two elevators should be fastened to one, through torque tube.

Stabilizer Beams Made Alike

Some engineers have been calculating the size of the stabilizer beams by assuming the rear beam to take all of the stabilizer load, and also the load from the elevator hinges. Both beams are then made the same size. This may in some instances lead to serious difficulties and is, in general, not approved. The rear stabilizer beam may be strong enough to carry all of the load, but this load may never reach it due to failure of the forward portion of the stabilizer.

The National Advisory Committee for Aeronautics, in experiments made at Langley Field, has found a load as high as 150 lb. per square foot along the leading edge of the stabilizer in certain maneuvers. Commercial planes are designed to carry a uniform load of only 30 lb. as a maximum over the whole horizontal surface. This may amount to 35 to 38 lb. over the stabilizer, due to the distribution of load between the stabilizer and elevator. It can, therefore, be realized that the commercial planes are not designed for very high tail surface loads.

It seems to be the rule now, that most commercial planes have stabilizers, which are adjustable in flight. Quite a number have the adjusting device fastened to the front spar of the stabilizer, and the trailing edge pivoted. This arrangement is somewhat dangerous, and, while the Navy does not allow its use, the Department of Commerce so far has not disapproved it. Such designs are, however, carefully considered.

In the event that the adjustment mechanism on the front spar fails in service, an up load on the stabilizer will fold the stabilizer up into a vertical position, resulting in the plane going into a dive from which it is impossible to recover. It is possible that several heretofore unexplained crashes have been caused by this. It is, therefore, considered the best practic to fasten the adjustable mechanism to the rear spar of the stabilizer.

There are still commercial planes being built with the tail surface bracing of hard wires. This haas at least two disadvantages—considerable drag as compared to streamlined wires, and lack of strength. A terminal made in hard wire cannot be relied upon. In calculating the strengthof hardwire, only 85 per cent of the rated strength of the wire is used, because we know that the strength of the terminal is considerably less than that of the wire. Actual tests have shown that such terminals sometimes fail at as little as 15 per cent of the strength of the wire.

A well designed tail unit need have no brace wires, if the fin spars are built into the fuselage, and are so designed that they need no external bracing. In this event, struts from the fuselage to the spars at the under side of the stabilizer will be necessary. The design load on the stabilizer is down. It frequently happens that streamlined wires are used above and below the stabilizer. This is expensive construction since steel struts could be used underneath. Such struts cost only a fraction of the amount spent on the streamlined wires.

Auxiliary Skid Advantageous

It is always a good policy to provide a small auxiliary tail skid, which is secured to tail post. This may consist of a few tubes welded to each other, and to the tail post. The object of such an auxiliary skid is to protect the rudder in case the primary tail skid fails. Such an addition costs little inweight and money, but it may save the rudder.

After tail surfaces are designed, and the stress analyses made, a set should be manufactured and tested to destruction. A study of a number of tests has shown that usually some little fitting, which was not considered seriously in the stress analysis, fails before the main structural members. When a manufacturer is planning to build more than two or three of a type, it is strongly recommended that destruction tests of the tail unit be made. In such tests, it is advisable to connect up the control system with a spring balance on the control stick. In this way, not only are the control surfaces tested, but also, the control system and the load on the control stick.

A few points may be given on control surface hinges. With a welded metal construction, care should be taken to design the hinges so that their connections to the spars develop some shear and not all tension. A very important point to remember is to provide plenty of bearing area. Hinges are usually small, weighing very little, so that the bearing areas could be doubled without much increase in weight.

The Croydon Airport

New Field Serving London, England, is Rated as Being One of the Best Equipped Airports in the World

By Fred J. Knack

IN THE new field at Croydon, England, London has one of the finest airports in the world. Its nearest rival in Europe is Templehof airport in Germany, with respect to these two airports, a peculiar situation exists. British pilots insist that the Berlin field is the better, while German pilots swear by the English airport.

The new London airport is located on the site of the old Croydon field, which is about 12 mi. from the center of the city. This new field is extremely large. A plane can run 1,400 yd. in any direction before taking the air, and still will clear all obstructions. Much other suitable land lies around it, which the Air Ministry considered incorporating in the new field; but it was felt, that under present conditions, this was not necessary.

The field is never in such bad condition as to make the operation of planes from it dangerous, but in bad weather the machines do tear up the surface. A system, evolved at the Rotterdam Airport, may be put in effect to remedy this condition. This is to pave a strip around the edge of the field. A plane, on landing, would taxi to the nearest point on the paving, and would finish its trip to the buildings on this. Similarly, a plane would taxi into position for taking off as far as possible along the paving. This scheme is now in use at the Rotterdam Airport. The space in front of the hangars and administration building is also paved, so that the engines can be warmed up without generating a cloud of dust.

The view from the gallery outside the Control Office at the Croydon Airport

The main structures at Croydon consist of an administration building, and two hangars. In addition to these, there is a hotel. The administration building is a large, low affair, which houses the offices of the airport administrators, a booking hall and waiting room, and the customs station. Except for the control tower in which the control room is located, this building is only two stories in height, and so is no more of an obstruction to the planes than are the hangars.

Just inside the large doors, as one enters the building from Purley Way, the street which bounds the field on the east, is the large waiting room, which is also the booking office. This room is about 60 ft. square. On two sides are located the offices of the airlines operating from the field. To one side of the entrance doors is a postal and telegraph office, and to the other, a book shop. In the center of the room is a large octagonal post, bearing on each of its eight faces, two clocks and a bulletin board, which tells the times of arrival and departure of planes on each of the air routes leaving the field. Opposite the entrance, and between the two sets of doors, one of which is for arriving and the other for departing passengers, is a large map depicting the several routes radiating from Croydon.

An air view of the buildings at the Croydon Airport

The central part of the waiting room is the full height of the building, and is lighted by a glazed dome in the roof. That portion over the booking office is surmounted by a balcony, off which are private offices for the officials of the air transport companies.

Back of the waiting room, and separated from it by a small passageway at one side where passengers may get refreshments, is the room where police and immigration officials make their inspections. This is a long, bare, narrow hall, which is so much larger than is necessary at present, that it always looks deserted.

Outward bound passengers leave this hall by a door at

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The Transcontinental Air Derbies

THE transcontinental air derbies, held in conjunction with the 1928 National Air Races, were officially started at Roosevelt Field, L. I., Wednesday, September 5, at 5 43.45 A. M. (Eastern Standard time). At that moment George H. Townsend, president of The Motometer Co., Inc., and starter for the derbies, brought down the red flag, which sent the first plane of a field of 37 off on the first leg of the Class A New York to Los Angeles derby. The number of entries to start this race, conducted for planes with engines of not more than 510 cu. in. piston displacement, was ten more than started in the corresponding race last year.

Earl Rowland, who led the fliers in the Class A derby practically all the way across the continent with his "Scarab" powered Cessna monoplane, was the first to finish at Mines Field, Los Angeles. He landed his plane at 2 34 P. M., Monday, September 10. One minute later, Robert Dake, piloting entry No. 83, an American "Moth," likewise powered with a Warner engine, crossed the finish line. "Tex" Rankin, flying an OX 5 powered Waco 10, was the third to drop down on the field. He landed at 2 36 P. M. Entry No. 20, the Travel Air piloted by W. H. Emery, Jr., and equipped with a Scarab engine, landed at 2 38 P. M. Theodore W. Kenyon was the fifth to finish. He landed his Warner engined Challenger at 2 39 P. M.

Elapsed Time Estimated 26 Hr. 30 Min.

While an accurate record of the total elapsed time for each plane has not yet been compiled by officials of the contest committee, it is generally conceded that the Cessna monoplane was the winner. The actual flying time for this plane from New York to Los Angeles was estimated at 26 hr. and 30 min. The American Moth, it is believed, will be the second place winner. The estimated time for this plane was 27 hr. and 15 min. The Travel Air, piloted by Mr. Emery, undoubtedly will be the third place winner. The time in the air for this plane was computed unofficially as 28 hr. and 13 min.

Twenty-three of the 27 planes, which started in the derby, finished the race. The pilots and race numbers of remaining 18, in the order of their arrival at Mines Field, are as follows: Eugene J. Detmer, No. 27; George Zinn, Jr., No. 35; Louis E. Derryberry, No. 47; James S. Charles, No. 8; George Hopkins, No. 141; S. J. Wittman, No. 67; A. K. Owen, No. 103; Arthur W. Killips, No. 37; A. H. Kreider, No. 93; George W. Brill, No. 21; Alfred H. Stanley, No. 36; Warren B. Smith, No. 18; John E. Carberry, No. 29; Stuart Chadwick, No. 109; Sidney A. Riley, No. 168; S. H. Turner, No. 26; Don S. Phillips, No. 46; M. E. Grevenberg, No. 104.

In spite of the chilly weather and the early hour, there were over 1,500 spectators at the field to witness the start of the first air derby. It was estimated by police, stationed there to maintain order. Even as early as 4 A. M. there were over 500 persons present. And the spectators were not disappointed. The sky was overcast, but as soon as it became sufficiently light the planes were sent off. There was no delay whatever. One after another, at intervals of one minute, they took to the air. All 37 planes made excellent take-offs. There was not one false start.

Albert R. Jacobs, pilot of the Waco 10, entered by Fisher & Jacobs, Inc., and powered with one of the LA-1

E. E. Ballough (left) and Charles Dickenson, pilot and passenger of the Class B Laird entry No. 40

radial air cooled engines manufactured by this concern, was the first to take off. His passenger was Sam Gordon. The race number assigned to this plane was 17, but in drawing lots with the other pilots for a place in the starting line Mr. Jacobs obtained the first position. He was followed by Dan R. Robertson, who was at the controls of one of the OX-5 Curtiss "Robins," entered by the Curtiss-Robertson Aircraft Co. With him, as a passenger, was Earl Doherty. The race number of this plane was nine.

The race numbers, types, engines and pilots of the thirty-seven planes, in the order that they started, are as follows:

Number	Plane	Engine	Pilot
17	Waco 10	F & J LA-1	Albert R Jacobs
9	Robin	OX-5	Dan R Robertson
60	Lincoln-Page	OX-5	Leslie C Miller
80	Lone Eagle biplane	Monodsville	J W Hunt
93	Challenger	OX-5	A H Kreider
27	Travel Air	OX-5	Eugene J Detmer
8	Eaglerock	OX-5	James S Charles

Number	Plane	Engine	Pilot
21	Travel Air	OX-5	George W Brill
26	Berliner	OX 5	S H Turner
83	American Moth	Scarab	Robert Dake
61	International	OX-5	D. A Speer J Dixon Davis
46	Challenger	Scarab	Earl Rowland
99	Cessna model A	OX-5	Don S Phillips
51	Challenger	Scarab	Theodore W Kenyon
50	Travel Air SD-2000	Aeromarine B	Douglas H Davis
53	Challenger	OX-5	Sebastian L Pond
109	Waco 10	OX 5	William B Harding Stuart M Chadwick
103	Pitcairn PA-4	OX-5	A C Carl A K Owen
10	Robin	OX-5	Stancel P Gilley
18	Swallow	OX-5	Warren B Smith
16	Eaglerock	OX-5	Harry Smedley
67	Pheasant	OX-5	S J Wittman
38	Travel Air	OX-5	Wilfred B Gerbracht
36	Waco 10	OX 5	Alfred H Stanley
141	Stinson Junior	Scarab	George W Hopkins
20	Travel Air	Scarab	W H Emery, Jr
35	Challenger	OX 5	George Hand George Zinn, Jr
104	Lincoln-Page	OX-5	M E Grevenberg
117	Swallow	OX-5	L. H. Connell
29	DeHavilland Moth	Cirrus	John E Carberry
15	Berliner	OX 5	Paul D Charles
118	Swallow	OX-5	Dale G Jackson
13	Waco 10	OX 5	"Tex" Rankin
37	Waco 10	OX-5	Arthur W Killips
168	Travel Air	OX-5	Sidney Riley Donald A Kundel
19	Mohawk Pinto	Scarab	Joseph A Nouncki Walter E Nicol
47	Travel Air	OX-5	Louis E Derryberry

Harrisburg, Pa., was the first stop for the planes entered in the Class A derby. Thirty minutes was spent there to provide time for refueling. Another half hour was spent at the second stop, which was McKeesport, Pa. Columbus, O., was the third control city, and the first overnight stop for the planes. Only 31 of the original 37 landed there. Entries No. 15 and No. 50 had been forced out of the race definitely, and No. 10, No. 38, No. 19 and No. 61 were down along the route.

Earl Rowland, piloting the Cessna model "A", lead the field of 31 survivors into Columbus. He landed there shortly after 11 00 A. M. He was followed closely by the American "Moth," piloted by Robert Dake. The third plane to land was the Travel Air, powered with a Warner "Scarab" engine and piloted by W. H. Emery, Jr. The others in the order of their arrival were Nos. 51, 8, 27, 13, 18, 53, 109, 29, 93, 36, 46, 47, 35, 118, 80, 67, 117, 103, 104, 16, 37, 26, 168, 60, 9, 141, 17 and 21.

The four leaders maintained their positions during the second day of the race, which took the fliers from Columbus to Terre Haute, Ind.; St. Louis and Kansas City, Mo., the second overnight stop. The last lap of the day's run was the fastest flown. The Cessna model "A", in the lead, completed the 240 mi. "jump" from St. Louis to Kansas City in one hour and 50 min. This brought the total flying time of the plane up to eight hours and seven minutes for the entire distance from New York to Kansas City. The second plane, the American Moth, was just 28 min. behind, with a total time of eight hours and 35

The Cessna monoplane piloted by Earl Rowland to first place in the Class A race

min. The Travel Air, flown by Mr. Emery, had a total time of nine hours and one minute chalked up against it.

Four planes were forced down during the day. No. 9 went down in flames. Nos. 16 and 80 landed near Indianapolis, while No. 117 was forced down east of Jonesburg, Mo. The twenty-seven planes, which checked in at Kansas City, in the order that they landed, are 99, 83, 20, 51, 27, 8, 13, 118, 141, 47, 67, 37, 29, 104, 18, 109, 53, 26, 35, 21, 17, 60, 36, 168, 93, 46 and 103.

While the Class A fliers were spending the night in Kansas City someone stole Tex Rankin's black cat, which he carried as a mascot in his entry, No. 13. It is not known whether the loss of the cat improved his luck, but at any rate his OX-5 powered Waco 10, which was the seventh plane to leave Kansas City, was the third to land at Forth Worth, Tex., at the end of the third day of the race. The Cessna model "A", piloted by Mr. Rowland, was again first, and the American Moth, piloted by Mr. Dake, was second.

The Travel Air, powered with a Warner Scarab engine and flown by Mr. Emery, which was the third to land at the first two overnight stops, came in sixth at the Fort Worth municipal airport. Dale G. Jackson, piloting No. 118, was the fourth to arrive, while George W. Hopkins,
(Continued on page 880)

The line up of the Class A entries on Roosevelt Field, L. I., just before the start of the race to Los Angeles.

Air Races and Aeronautical Exhibit Officially Opened

Army and Navy Formation and Stunt Flying Features First Three Days of Activity

MINES FIELD, LOS ANGELES, CALIF.—On Saturday, September 8, at 12:30 P. M. (Pacific Coast time), Mayor George E. Cryer of Los Angeles officially opened the most elaborately staged National Air Races and Exposition ever held, by delivering a short speech in front of the Exposition Building. At the conclusion of the speech two young ladies appropriately dressed for the occasion drew back the crimson curtains at the main gate of Exposition Building, as the Golden State Band played the national anthem. There were fewer airplanes on exhibition than at Detroit, but more accessories. The number of persons attending the opening exercises was considerably less than had been expected. The show is said to have cost about $400,000. The arrangements for parking cars and the handling of the crowds are excellent. The Exposition Building presents a most colorful and attractive appearance and the exhibits were almost all completed at the time of the opening.

The main entrance to the Exposition Building is also the entrance to Mines Field, the stands being reached by passing through the building. Directly in front of the main entrance to the building is the main gate which is arranged to accommodate those arriving via taxi, bus or special auto service. Between this gateway and the Exposition Building a beautifully arranged fountain has been located in the center of a grassed parkway, gravel walks passing on either side. The central figure of the fountain is a life size statue of Colonel Lindbergh.

Many Manufacturers Represented

As one enters the Exposition Building he confronts the Maddux Ford airplane. Beyond the Ford plane is the big F-10 Fokker of the Western Air Express. To the right of the Ford is an uncovered Douglas Army observation plane and to the left is the striking Waco exhibit of a pure white Waco 10 mounted upon a black and white checkered oilcloth floor. Beyond these airplanes which immediately catch the eye of the newcomer are other models representing almost every important producer in the industry. On the right side of the airplane exhibit space are the Ryan-Mahoney Brougham, the Boeing Wasp Mail plane, the glistening Wasp engined Prudden metal monoplane, the tiny Los Angeles built Golden Eagle single place sport monoplane, and the almost as tiny Monocoupe, and the crimson "Cavalier" being displayed by the Star Aircraft Co. of Bartlesville, Okla. Along the left side of the aircraft space a black and gold Kreider-Reisner "Challenger," a stripped American Eagle fuselage handsomely finished in gold, and two special American Eagle biplanes with sea green and flesh pink color combinations set off with natural aluminum, and the little low wing "Flying Dutchman" of the Szekely Aircraft Co. are outstanding. Later, as one has the opportunity to approach the various exhibits more closely a vast number of aircraft seem to unfold in brilliant array. Lockheed, Bach, Eaglerock, Stearman, Travel Air (Art Goebel's famous Woolaroc), Douglas commercial monoplane, Federal CM-3 (an all welded steel tube plane), Pinto, Simplex, Essig sportplane, and many others of every conceivable type are crowded wing to wing.

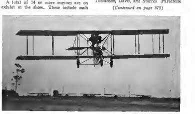
A Triple Row of Booths

A triple row of booths extends around the entire building. Some of the most comprehensive displays of parts, equipment, and engines are to be found here. On the right in entering, a remarkable display of aluminum parts is arranged in the Aluminum Corporation of America space. On the left of the aisle as one leaves the building to reach the stands, is the Wright display with the famous cutaway Whirlwind. Excellent propeller displays are shown by Standard Steel (featuring the three blade propeller), Curtiss Reed, and Westinghouse with the Micarta propeller. C. S Storey, California Propeller Works, Hartzell, Jacuzzi and Hamilton are featuring wooden propeller displays.

A total of 14 or more engines are on exhibit in the show. These include such well known products as Wright, Pratt & Whitney, Ryan Siemens and Anzani, and some of the newer developments such as the Kinner, Velie, Hallett, Axelson-Floco, Rocky Mountain, and Atlas.

The feature of the opening day was the arrival of the military planes. A squadron of nine Keystone bombers arrived from Langley Field, Va., under the command of Maj. Hugh J. Knerr. Admiral Moffet arrived from San Diego with an escort of 60 naval planes and the first Pursuit Group arrived from Selfridge Field in the afternoon. The intended mass formation flight of 300 civilian planes over the city was called off and most of the afternoon performance was given by military planes, as few civilian planes were present. The feature flying event of the afternoon was an extraordinarily accurate stunting formation by the "Three Sea Hawks," Lieuts. Tomlinson, Davis, and Storres. Parachute

(*Continued on page 875*)



"Al" Wilson aloft in his rebuilt Curtiss pusher biplane of the vintage of 1910

Drury Leading Canadian Fliers

ROCK SPRINGS, Wyo.—As AVIATION goes to press, William Drury of London, Ontario, has arrived here holding the lead in the international race from Windsor, Ontario, to Los Angeles. He is flying a Waco plane. Second to arrive, and the only remaining pilot in the race, is Kennedy Whyte of Hamilton, Ontario, in a DH Moth.

Of the five fliers who left Windsor, Drury and Whyte were the only two to reach Omaha, the first night stop, in the required time. Two of the other three pilots, C. V. Towne and C. Stanton, both of Windsor, were reported down in Iowa, while F. G. Abbott was forced to turn back, it is said, shortly after the take off.

M. E. Oliphant of Ann Arbor, Mich., is flying with Drury as passenger, while H. R. Campbell of Hamilton accompanies Whyte.

Rockaway Squadrons Commended by Board

NEW YORK, N. Y.—In its annual report to the Secretary of the Navy, the Naval Reserve Inspection Board has recommended that letters of commendation be given to the commanding officer of Rockaway Naval Air Station for having the highest final merit for the year in the respective classes. Squadron VN-3RD3 was awarded first place and Squadron VN-4RD3 was awarded second place in the final standing of 24 aviation divisions throughout the country.

Through the untiring efforts of Rear Admiral Louis Josepthal, commanding officer of the New York State Naval Militia, Rockaway Naval Air Station has come to its present high standing. The station operates under the joint control of the Naval Militia and Naval Reserve and has recently received support from the City of New York.

Plans are under way to make a two way landing field large enough to accommodate any type of plane. Lieut. J. W. Yeoman, U. S. N. R., is the present commanding officer and Lieut. C. K. Wildman, U. S. N. R., is the executive officer.

Aircraft Will Be Made By Gardner Motor Co.

ST. LOUIS, MO.—It is reported here that the Gardner Motor Co. has formed a $2,000,000 company to manufacture monoplanes. Amos O. Payne, advices from Wichita state, has accepted a post with the new enterprise. He leaves his position as chief engineer of the Swallow Airplane Manufacturing Co. to take up duties with the St. Louis concern.

It is understood that the Gardner company will employ the new aero engine being developed by the Lycoming Manufacturing Co. of Williamsport, Pa., the firm with which T. H. "Doc" Kinkade, engine expert, lately became affiliated. A Lycoming engine is used in the Gardner cars.

Lincoln Has Chicago Branch

LINCOLN, NEB.—Increased business necessitating such a move, the Lincoln Aircraft Co., of Lincoln, Neb., has established a branch office at Chicago with Edwin Baumgarth, who formerly handled Lincoln Page plane sales in that city, named representative.

Mr. Baumgarth, who has taken flying instruction, now pilots a Lincoln-Page thus joining the list of flying sales managers. The new office is located in the Wrigley Building.

J.A.N.. Agent for Two Planes

DETROIT, MICH. — Distributorship for two types of light airplanes, the Mohawk "Pinto" and the Monocoupe, has been taken by the J. A. N. Aircraft Co., of this city, it was announced recently.

Schedule Race To Cincinnati

NEW YORK, N. Y.—With the Henry C. Yeiser Trophy and $20,000 at stake, an air race will start from Los Angeles the week beginning September 17 with Cincinnati, O., as the goal, according to H. A. Bruno, New York representative of the Cincinnati Air Race Committee. There will be three classes in the competition. Planes with engines of less than 510 cu. in. displacement will fly in Class A, the range from 510 to 800 cu. in. will constitute Class B, and a non-stop race has been arranged open to any type of craft.

The prizes offered are: Class A, first place, $2,000, second, $800; third, $400, fourth, $200, fifth, $150. Class B awards are: First, $2,000; second, $900, third, $400, fourth, $200. The non-stop prizes are: First, $3,000; second, $1,000; third, $500. In addition to the finishing position awards, $100 will be given every pilot finishing the race before sun-down September 23.

Many of the Los Angeles derby participants are expected to compete.

New Pittsburgh Firm Is International Agent

PITTSBURGH, PA.—The Dawson Aircraft Corp. has been formed in Pittsburgh to handle the distribution of International plants which are manufactured by the International Aircraft Corp., Cincinnati, O. and also to engage in student instruction and general commercial flying. The president of the company is R. F. "Joe" Dawson, pitcher for the Pittsburgh Pirates.

Dawson was chief machinist's mate and also an instructor of flying at the Naval School in San Diego during the war. He remained in the service for several years after the signing of the Armistice, and has considerable time to his credit. Dawson has been actively interested in aviation ever since the war and only recently purchased his first International plane which he will use for demonstrating and for student instruction. His new company will operate from Rodgers Field, Pittsburgh.

Chicago Firm Opens Branch

CINCINNATI, O.—With the future success promised by the maintenance of a municipal airport in Cincinnati in mind, the Chicago Aeronautical Service, Inc., has opened a branch office here with A. J. English in charge. The Cincinnati office will take care of the firm's local advertising, the aerial survey work, map making, passenger service, and like phases of commercial aviation.

Stearman Starts On New Plane

Wright 300 hp. J-6 Engine To Be Used as Stock Power Plant

WICHITA, KAN.—One of the first planes to be powered with the new 300 hp. Wright J-6 engine is the new cabin biplane now being built at the factory of the Stearman Aircraft Co. The new plane will be known as the Stearman Coach and will have accommodations for three passengers and pilot. The company expects delivery on the first J-6 engine by November 1.

Work on the plane was started recently in the new unit of the Stearman plant and it is stated by officers of the company that the plane will be in the air within 90 days. The new factory unit doubles the floor space. It is intimated by company officials that production may be doubled within a short time. The Stearman plant is turning out three Whirlwind planes each week. Wright Aeronautical factory officials have assured Stearman 15 Whirlwind engines for September and an equal number for October.

Plan Huge Planes

Construction in Wichita of huge transport planes, carrying from 20 to 25 passengers, is visioned by officials of the Stearman company, who actually have their engineers at work on plans for these planes.

"Actual construction of the big planes is something for the future," says J. E. Schaffer, sales manager for the company. "There is a market in the United States for them. Lack of them is what is holding up installation of train-plane service across the continent. The big need now is for four-motored, 2,000-horsepower planes, such as some now being used in Europe. Our engineers have something like that in mind. Such a plane would have a market value of about $80,000."

Two Bruno-Blythe Contracts

NEW YORK, N. Y.—H. A. Bruno, R. R. Blythe and associates, public relations counsel of 220 West 42nd St., New York City, have been appointed to take complete charge of the publicity in connection with the dedication ceremonies and other events related to the opening of the Newark Airport which is to take place this month.

The Bruno-Blythe organization is also to handle publicity for the Cincinnati Race for the Henry C. Yeiser trophy to be held September 22 and 23.

New Baltimore Company

BALTIMORE, MD.—A new Baltimore concern is the Tidewater Air-Lines, Inc.

Test Monoplane Of New Design

Windows Placed in Lower Wing Surface Provide Good Visibility Below

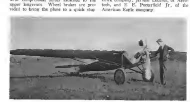
KENMORE, O—A new monoplane, embodying several unusual design features is being tested at Stow Flying Field, Akron, and plans are underway to produce the plane in quantity as soon as the tests have been completed. The LC 11, as it is designated, is a two place, externally braced type powered with 55 hp. air cooled radial engine designed and built by W G Clark, of Akron. The plane was designed by V C Babcock, of Akron, who built it with the aid of several assistants

The plane has a wing span of 30 ft. and an overall length of 19 ft. Its high speed is approximately 100 m p h. It carries a useful load of 500 lb and consumes 3 1 2 gal of gasoline per hour. The fuselage and wing structures are built of wod and the fuselage is covered with plywood Conventional fabric covering is used on the wings

One of the outstanding features of the plane is the location of the wing, which is in two sections. The panels are attached to the upper fuselage longerons in such a way that the lower surface of each panel meets the fuselage at the longeron This arrangement would produce poor visibilty below if it were not for windows in the lower surface of each panel, through which the pilot is afforded an unobstructed view of the landing gear and the ground directly below. Pilot and passenger are seated side by side in the single cockpit and dual controls are provided.

Another interesting detail is the wheel used to replace the customary tail skid This wheel is partly housed within the rudder, which is split at the bottom to accommodate the upper half of the wheel The location of the wheel facilitates steering on the ground.

Landing gear is of the divided axle type with compression struts attached to the upper longerons Wheel brakes are provided to bring the plane to a quick stop



Front quarter view of monoplane designed and built by V C Babcock of Akron. It is powered with a new type radial air-cooled engine.

Tax Assessors Use Air Photos

NEW YORK, N Y—Employment of aerial photography for tax assessment purposes is proving a great help in the cause of efficiency, according to a report made public by Fairchild Aerial Surveys, Inc., showing that 14 cities and towns in the State of Connecticut now utilize this new method for making tax maps.

The municipalities in that state using aerial photography, for tax equalization, city planning, and general engineering purposes are Hartford, Middletown, East Haven, Rocky Hill, Berlin, Manchester, East Hartford, Plainville, Portland, Southington, Windsor, Greenwich, Bloomfield, and Norwich

A. S. M. E. to Meet in Wichita This Month

WICHITA, KAN.—A meeting is to be held here September 21-22 by the Aeronautic Division of the American Society of Mechanical Engineers. The event has been so arranged that those returning East from the National Races will have an opportunity to attend. C L Henderson, vice-president of the Vickers Petroleum Co., Wichita, and Mac Short, vice-president of the Stearman Aircraft Co., Wichita, are in charge of arrangements with several local clubs including the Flying Club and Engineers' Club, co-operating

On the first day two papers will be presented—The Commercial Aircraft Engine of Medium Power, by Richard M. Mock former technical editor of AVIATION, and The Type Testing of Commercial Airplane Engines of Medium Power, by the Bureau of Standards An afternoon symposium will be held on The Problems of Commercial Plane Production, the participants being Walter Beech, Travel Air President, W. C. Cumming, of the Mohawk company, Jerome Lederer, of Aerotech, and E E. Porterfield Jr, of the American Eagle company

Work Progressing on Wright Plant Wings

PATERSON, N. J.—Foundations and superstructures for the second and third additions to the plant of the Wright Aeronautical Corp have been completed and the first wing is ready for occupancy Record breaking orders for Whirlwind engines have justified a five fold increase over the plant facilities utilized in the past 18 months, according to Guy Vaughan, vice-president and general manager of the company.

With the completion of the new plant, including a recently constructed assembly and test unit totaling 60 000 sq ft of floor space, the Wright Company will build aviation engines in a factory covering 501,400 sq. ft. With the new assembly plant in operation, the Wright Company is building approximately 170 aviation engines per month, and, with the addition of the new wings added to the old plant, facilities will be available for the construction of 500 "J" type engines per month.

The Wright Company has made further increase in its property holdings through the purchase of approximately two-thirds of the American Locomotive Company's old works at Paterson, N J The sixteen acre tract, valuable for its proximity to the Erie Railroad and the Wright plant, will be held as real estate insurance, according to Mr Vaughan.

Noville Gets Union Lines Technical Post

SAN FRANCISCO, CALIF—Lieut. Comdr George O Noville, U S N R, engineer of the Byrd trans-Atlantic flight, and for 15 yrs a conspicuous figure in their transportation, has accepted the appointment as technical director of the Union Air Lines, Inc according to official announcement here by H Clay Bernard, executive vice-president of the Union corporation.

Noville's duties in his new post will be similar to those of Col Charles Lindbergh with the Transcontinental Air Transport, Inc. His headquarters will be in San Francisco He will exercise complete supervision over the engineering, mechanical, and routing departments of the Union organization

On September 20, Noville will leave here for Europe to conduct an exhaustive survey of air transportation lines and the aircraft industry

Proctor Succeeds Ronne

BUFFALO, N. Y.—Capt. W Heath Proctor has been appointed chief pilot of the Colonial Western Airways, Maj Gen John F. O'Ryan, president of the concern, announces Captain Proctor succeeds the late Lieut Edwin M. Ronne

Captain Proctor has been flying with Colonial Western Airways since the Buffalo-Cleveland route was started last December

(*Continued from page 872*)

jumping and formation flying by the "VB2B" Navy Squadron from San Diego and the Eighth Marine Squadron kept the crowd interested The aerial humor of the day was furnished by "Al" Wilson flying a rebuilt Curtiss pusher of the vintage of 1910 A plane which was formerly an old Boeing flying boat but, for the occasion had been disguised as a flying locomotive had a minor crash in spite of its cowcatcher. A music ballet and vaudeville in front of the grand stand and fire works on the ground and in the air completed the evening's entertainment

Another day of beautiful southern California weather dawned for the events on Sunday If any were skeptical as to the success of the affair as indicated by the turn-out on Saturday, they completely reversed their opinions on Sunday. Exposition building was thronged with visitors shortly after it had opened and as the time approached for the first field event which was to be held at two o'clock, the grand stand and bleachers were filled with a capacity crowd of 15,000 and thousands more were lined up behind the barriers surrounding the field

Sensational flying by Army and Navy squadrons in formation and spectacular stunting in formation by the Three Sea Hawks in FB2-1 Boeing fighters powered with Wasp engines were the events which drew the greatest amount of applause from the crowd On the dot of two o'clock 15 Wasp powered Corsairs, comprising Navy Squadron "VB2B," took off and gave a demonstration of formation flying which, for perfect alignment maintaining position, and clever maneuvering, could not be excelled. While this squadron was still in the air Marine Corps Observation Squadron No 8 consisting of five Wasp powered Curtiss observation planes took off and did some beautiful formation work This squadron was disappearing toward the west when the Corsairs, coming up over the grand stand from the north-east at an altitude of 5,000 ft., broke their formation and dived in flights of three directly over the crowd

Stage a "Dog-Fight"

At the height of a few hundred feet they again broke up and put on a dog fight which brought even the most blasé old timers to their feet During the fight three Navy parachute jumpers dropped from a Martin bomber at a height of 6,000 ft. One of them, George Bring, came down to an altitude of what was believed to have been less than 500 ft before his chute opened The drop was regarded as one of the most spectacular ever seen and it was learned later that it was not a planned delayed record drop but that Bring had had some difficulty in opening his chute

Al Wilson then took his old Curtiss pusher aloft for his daily exercises and the entertainment of the crowd A striking contrast between the old and the new was made possible when Merle Kelly took off Prof. M M Merrill's variable incidence biplane powered with a five cylinder Kinner engine This little plane with its excessively short body, absence of stabilizer, and general unconventional appearance took off in a very short run and flew like any of its less radical mates. A description of this plane will appear in an early issue of AVIATION. A nine-plane formation comprising the Army's Third Attack Group from Fort Crockett, near Galveston, Tex, took off next and proceeded to demonstrate to the crowds what ground troops must face in the next war to end wars

Approve Planes And a Propeller

WASHINGTON, D C.—An approved type certificate has been granted, it is reported, to the Standard Steel Propeller Co. of Pittsburgh, Pa., for that firm's adjustable pitch eight-foot six inch diameter propeller for power plants not exceeding 100 hp.

Announcement is also made of two additional approved type certificates for airplanes These are No 70—Mono-Aircraft, Inc., Monocoupe, two place monoplane, Velie 45 hp engine, and No 71—Spartan Aircraft Co., Model C-3 three place biplane, Ryan Siemens 120 hp. engine

Smoke Screen Laid

Another exhibition of clever stunt flying by the Three Sea Hawks proved again to be the attraction. These Boeing planes are from Strafing Squadron No. 2 of the airplane carrier *Saratoga*, and the Navy has good reason to be proud of the flying of these three crack pilots A smoke screen which obliterated the scenery for miles around was laid down by three Navy planes and the Three Sea Hawks played around in these artificial clouds to the delight of the crowd The Russell Lobe training parachute was shown in action in several drops including a double one from a Waco 10 powered with a Whirlwind engine.

Of the two speed events held on Sunday the first was Special Event No. 5, a 50 mi. race of 10 laps over a five mile course for Marine Squadron No. 8 (Curtiss Falcon "Wasps") First place was won by Lieutenant Becker in 23 min. 21 sec. with an average speed of 128.479 m p. h, Lieutenant Cushman was second in 23 min. 22 1-5 sec. with an average speed of 128.388 m p h. Sergeant Pounders was third in 23 min 26 sec. with an average speed of 128.105 m. p h. Sergeant Ewalt was fourth in 23 min 27 sec., Sergeant Hull fifth in 23 min 35 sec and Lieutenant Wodarcyk sixth in 23 min. 40 sec. Lieutenant Becker took the lead from Lieutenant Cushman on the last lap, while Sergeant Hull flew close to the pylons and took the lead from Lieutenant Wodarcyk on the ninth lap

The next event, Special Event No. 8, a 60 mi. 12 lap race for Navy Squadron "VB2B" (Boeing "Wasp"), was called off when Lieut George Hasselman crashed on the home pylon on the fifth lap. Lieut Hasselman had flown dangerously low on every pylon and, slipping off a vertical bank in front of the grand stand, his left wing tip caught and tore the wings from the plane. The plane dove nose on into the ground and tore out the engine while the wings flew high in the air The fuselage remained intact Lieutenant Hasselman was immediately rushed to a local hospital and it is stated that he has a splendid chance for recovery All the wreckage was removed from the field within 15 min. The race had continued in the meantime with Lieut. L. W Johnson in the lead However, the officials stopped timing when Hasselman crashed and no official place winners were announced. At the time of the crash the racers were in the following order, Lieuts. L. W Johnson, E. R. Peck, D C. Allen, W V Davis, Jr, A. B. Thompson, H M Cooper, T. P. Jeter, M T Seligman, Tomlinson, C. Chourre, A. P Storrs, H V. Hopkins, S E. Burrows, and George Hasselman

Monday, known as "Admission Day," saw almost as many persons gathered at Mines Field as the day before Long before noon the grandstands were overflowing and the concessionaries were doing a rushing business A Thaden metal plane and a tri-engined Bach Air Yacht had been added to group of exhibits in the Exposition Building during the night

The day's program of events was similar to that of Sunday and included exhibition flying and miscellaneous entertainment. Model flying contests during the morning attracted considerable attention. Twenty-two scale models built by boys under 16 years of age were shown D J. Evans won the first place cup and $150 with a model Douglas M V. In a contest for commercial models under 10 oz Byron Beanfield won first prize with a distance of 1,500 ft George Fox won second prize. In a contest for commercial models over 10 oz. Kazuo Endo, a Japanese boy, won first prize with a flight of 478 ft. "Billy" Whitney was second with 341 ft.

161 Plane Formation

The main program opened at noon with a massed formation flight of 161 Navy planes which was started from Mines Field and continued over all Southern California towns. The great array of strafing, fighting, observation, scouting, torpedo and bombing planes was most impressive

At 2 34 o'clock in the afternoon Earl Rowland, piloting a Warner "Scarab" powered Cessna monoplane, glided down onto the field and landed to be declared the unofficial winner of the Class A New York to Los Angeles air derby He was closely followed by Robert Dake in an American Moth and "Tex" Rankin in a Waco Although it is impossible to obtain official elapsed times at this writing it is fairly certain the Rowland was first, Dake second and W. H Emery, Jr. third.

The afternoon program was slightly marred when Lieut J J Williams, of the 95th Pursuit Squadron, San Diego, crashed after his engine cut out while flying a Curtiss "Falcon" (D-12) upside down at a low altitude. The plane struck on the right wing nose and landing gear

AIRPORTS AND AIRLINES

Nationwide Taxi Service Planned

Curtiss Organization and Associated Interests to Form New Company

NEW YORK, N Y.—Plans for the establishment of a nationwide air taxi service are now being made by the Curtiss organization and associated interests. The program calls for the formation of a new company to be known as Curtiss Flying Service, Inc., which will establish airports throughout the country where planes will be available at all times for special taxi service. The company will act as exclusive sales agent for the Curtiss Aeroplane and Motor Co and will establish completely equipped schools and service stations at each of the airports

Locations for the fields are now being sought and orders are soon to be given for complete equipment for approximately 25 airports in key cities throughout the country C. M Keyes, president of the Curtiss Aeroplane & Motor Co, and head of Transcontinental Air Transport, Inc., will be chairman of the new company and Casey Jones is to be president. The company will also co-operate with exsisting fields in its taxi service throught the establishing of sub agents. Three advanced schools located in the East, Middle West aud on the West Coast also will be established

The new company, according to Mr Keys, will be in a position to start operations almost immediately as it will acquire all of the assets and business of the Curtiss Flying Service, which was originally started as an exhibition company in 1910 with only $20,000 capital

The financing of this new enterprise, according to J Cheever Cowdin, will be underwritten by Blair & Co, Inc., J C. Willson & Co. and the National Aviation Corp.

To Improve Milwaukee Field

MILWAUKEE, WIS.— The county park commission has approved plans for the future development of the county airport which includes an east and west runway 3,400 ft. long, a runway northeast and southwest and another from northwest to southeast, each 3,200 ft long, and a runway from north to south 2,200 ft long Each are to be 100 ft. wide. With these improvements assured, plans will now be prepared for drainage Plans for the lighting of the hangar now being constructed at the airport were also approved

Air-Rail Patrons

Rail travelers from the East boarding the Northwest Airways Ford plane at Chicago to fly to the Twin Cities in the inauguration of the T. A. T. air-rail service.

Work Progressing on Airport at Mobile, Ala.

MOBILE, ALA—The development of the Municipal Airport of Mobile is progressing steadily The field has an area of 125 acres and has been leveled It is triangular in construction with relation to the runways, which are from 2,000 to 2,500 ft. in length

An office building has been completed, consisting of an office, ladies' rest rooms gentlemen's room with showers, light control room, waiting room and storeroom. Bids are out for a large steel hangar

Lights will be installed in the Winter prior to the beginning of night flying A filling station is now being installed for the supplying of gas and oil The field is situated four miles from the heart of the city on a paved highway

This Airport is operated by the city of Mobile Mr. Cecil Bates is the commissioner in charge of aviation O N Barney is superintendent of the port

Montana Firm to Build Hangar

ANACONDA, MONT—Contract for the construction of a 26 by 72 ft hangar at Crackerville has been let by the Anaconda Air Service Co

Grading Finished At Butte Airport

Four Hundred Acre Field on Yellowstone Trail Now Ready for Use

BUTTE, MONT—The Butte Municipal Airport, located four miles south of City on the Yellowstone trail is about ready for use. Graders have cut down the high spots and scrapers have filled in the low ones Rollers have smothed it and pressed down the loose dirt It is to be oiled. The altitude of the Butte port is 5,600 ft.

The tract composes 400 acres. It was bought by John D Ryan, chairman of the Board of Directors of the "A C M"—a copper mining company—and donated to Butte Mr Ryan was formerly chairman of the Aircraft Board under President Wilson.

The field is laid out in the form of a "T" with the stem crowded to south of the center of the cross The stem even extends slightly beyond its cross This permits the laying out of a third runway The main takeoff is 4,100 ft long and is north-south and has a width of 450 ft. After the removal of a few wires at the north side it will be practically without hazards. The east-west runway is 300 x 3,400 ft The third runway starts from the junction of the "T" stem and cross and is north-west by south-east and is 3,300 ft. in length and 300 ft. wide.

Plans as to what will be done in lighting and building of hangars are not completely worked out yet, but it is conceded that the port must be lighted as the government airway extension engineers are already surveying the Salt Lake City Great Falls airway for beacons. Tentative drawings call for six hangars, but it is very likely that as many as 20 will be built

Embry Riddle Reduces Fare

CINCINNATI, O—The Embry Riddle Co recently announced a reduction in fare between Cincinnati and Detroit on their regular week end service, in co-operation with the Stout Air Service. The fare, which was formerly $35 each way, will now be $24 and passengers are allowed 25 lb of baggage free

A Ford tri-engine monoplane will be used, and the schedule calls for departure from Detroit at 2 P. M Saturday, arrival at Lunken Airport at 5 P M, departure Monday morning at 9 30 A. M and arrival at Detroit at 12.30 P M Ford Airport is the Detroit Terminal, which lies a few miles west of the city.

Will Extend Mail Service to Mexico

Operation over Connecting Line to be Started On October 1

WASHINGTON, D. C.—According to a recent announcement by Postmaster General New, air mail service between the United States and Mexico will be inaugurated on October 1 This was made public following receipt of official notice from the Mexican Government that the service between Mexico City and Nuevo Laredo would be started on that date. Immediately on receipt of this information Postmaster General New authorized the extension on the same date of our Domestic service from San Antonio to Laredo, Tex., to connect with the Mexican line The contract for the extension line has been awarded to Texas Air Transport, Inc of Fort Worth

Provides Direct Service

Consummation of the proposed air mail service between the United States and Mexico follow months of negotiations between officials of the Post Office Departments of the two countries and a trip to Mexico by Second Assistant Postmaster General Glover The establishment of this service will provide direct air mail connections between Mexico City, Queretaro, San Luis Potosi, Saltillo, and Monterey, in Mexico and New York Boston Chicago and other large cities throughout the United States. It will be the most extensive international air mail service on this Continent

The rates of postage on all air mail articles from the United States to Mexico will be 20 cents for each ounce or fraction thereof This will cover all charges, including air mail service in both countries. The corresponding rates on articles from Mexico will be 75 centavos for each 20 grams or fraction thereof A special cancellation will be authorized for use by the post offices at San Antonio and Laredo on the initial trip

Three Days Saved

This new route will effect a saving of practically three days in the time of dispatch and delivery of mail matter from New York and the East to Mexico City At present it takes six days for a letter sent from New York by ordinary mail to be delivered at the Mexican Capital Under the new air mail service a letter leaving New York City on Monday noon will arrive at Mexico City by Wednesday afternoon and be delivered that same day

The tentative schedule is as follows

Southbound Leave Dallas 7 45 A M; leave Fort Worth 8 15 A. M; leave Waco 9 20 A M, leave Austin 10 25 A. M; leave San Antonio 11 15 A M, and arrive Laredo 12 55 P M North bound leave Laredo 2:35 P M, leave San Antonio 4 15 P M leave Austin 5 10 P M leave Waco 6 15 P M, leave Fort Worth 7 15 P M, and arrive at Dallas at 7 35 P M

There will be no night flying over the Mexican route The schedule tentatively arranged provides that the plane will leave Nuevo Laredo at 8 30 A M, and arrive at Mexico City at 5 40 P M Returning north the plane will leave Mexico City at 9 15 A M and arrive at Nuevo Laredo at 6 25 P M

Start New Line

R E Funkhouser, president of U S Air Transport, congratulating Pilot Herbert Pabst following arrival at Teterboro of first plane over new Washington-New York Line

Plan to Merge Two Kansas City Airports

KANSAS CITY, MO—The move to make Kansas City one of the air centers in the United States has taken a step forward through a plan just completed that will virtually merge the Fairfax Flying Field, in Kansas City, Kas and the Kansas City Municipal Airport, in North Kansas City, with only the Missouri River dividing them

The Woods Brothers Corp. here has purchased Fairfax Field, of 240 acres, and will add other land owned by the company and enlarge the field to 800 acres Guy F Stanley, manager for the Woods Brothers Corp. said his company was not entering in competition with the Kansas City Municipal Airport

With this announcement came another that the Porterfield Flying School was being moved to that field

Idaho Club Plans Hangars

WALLACE, IDA—Construction of two hangars, one for Osburn and one for Kellogg Field, is being planned by the Shoshone Flying Club of which C. E Haines, 412 Bank Street, this town, is president

Aviation Advance Noted in Spokane

Greater Progress Made Since January than in All Previous Years

SPOKANE, WASH — More aeronautical progress has been made in Spokane in the first part of 1928 than in all previous years combined

When the national air races of 1927 were held on the Spokane field, there were hangars for five commercial airplanes, in addition to the three National Guard hangars Since that time four new hangars have been built

The Mamer Flying service has hangar space for seven planes, the Spokane Airways for six, and the Johnson-Bigelow company and the Inland Eaglerock firm hangars for four planes each, giving a total hangar room for 21 planes

The Mamer service is operating one Buhl Airsdan, one Stearman three-place open cockpit plane and three Wacos In addition the service took a new Buhl craft for the non-stop flight from New York to Los Angeles in connection with the 1928 air races

Company Has Five Planes

The Spokane Airways has one Buhl Air sedan, one Ryan Brougham, and three International biplanes used in student training and short hop work.

Whitney Close, a private flier, has his Swallow housed in one of the Spokane Airways hangars. Johnson-Bigelow and Inland Eaglerock each has two planes With space for 10 planes in the National Guard hangars and for 21 in the commercial hangars, Spokane can accommodate 31 airplanes on its municipal field

This year, also, gasoline serving equipment and oil storage house have been put on the field.

The Spokane Airways in addition to its field equipment, maintains downtown school rooms which will accommodate 100 students It also has downtown booking offices.

The national air races last year proved the greatest stimulation Spokane ever had and progress from that time on was rapid Commercial hangars and planes in Spokane are estimated to be worth more than $150 000

Field Day at Omaha Airport

OMAHA, NEB—Aviation Field Day was held at the Municipal Airport on Labor Day under the auspices of the Omaha chapter, National Aeronautic Association. The program included exhibition stunts and formation flying Pleasure ride tickets sold through the N A A on that day were only for rides in inspected and approved planes, flown by experienced pilots

To Link Mexican Cities and Tucson

Travel Air Agents Are Arranging Details with Government to South

TUCSON, ARIZ—Southwest Air Service of this city Travel Air agency for Arizona and New Mexico, will operate daily planes between Tucson and the cities of the Gulf Coast, as soon as the necessary arrangements can be made with the Mexican Government The distance is only 150 mi and can easily be covered in 1½ hr. A thousand pounds of fresh fish will be brought from the coast daily, to be delivered on contract to various Arizona hotels, which will then be in a position to serve sea foods as fresh as those to be found in coast restaurants Sealed refrigerated boxes will prevent the odor of the fish from annoying passengers.

Residents of Tucson and guests at the hotels and "dude ranches" of the region may leave home in the morning spend the day fishing on the Gulf Coast, and be back for dinner in the evening In combination with the Los Angeles-Tucson service of Standard Airlines, this new connection will open up possibilities of quick communication between the Gulf and Pacific Coasts, that are expected to materially modify the business map.

Delaware Firm Has New Field at Luray

LURAY, VA—Following its program of establishing air fields along its entire route between important points the United States Air Transport Co, organized in June under the laws of the state of Delaware has announced the establishment of an air field in this city The establishment of an air field in Luray will be followed with one at New Market, 14 mi. from here. An air line from Norfolk to Washington will also be established.

The company recently absorbed several smaller concerns under the one name It will do air taxi service and conduct flying schools. The placing of an air field at Luray near the famous caverns of this section will be a strategic point in the development of air transport and taxi service.

Jasper Airport Opened

JASPER, TEX.—The municipal airport here was recently opened with a dedication ceremony under the auspices of the local post of the American Legion. The name of the city together with an arrow pointing to the field has been painted on the largest roof in town.

Mills Field Business Grows

SAN FRANCISCO, CALIF— Mills Field, San Francisco's municipal airport, showed a marked increase in business during August, according to a monthly report made public by Supervisor Milo F Kent, chairman of the city's airport committee. There were 1,931 flights and landings with 3,763 passengers recorded at the airport in August, a gain of approximately 600 per cent over the same month a year ago. evenue from hangar space for the past month was $1 635 55, lifting the enterprise nearer a self supporting basis which it is expected to reach soon

August Mail Traffic Shows High Increase

WASHINGTON, D. C.—Since the new air mail rates went into effect on August 1 an increase of nearly 100 per cent has been noted in poundage According to a recent announcement by the Post Office Department, air mail carried in August totalled 418,821 lb. compared with 214 654 lb for July.

The Chicago-San Francisco route continued to lead with 110 796 lb compared with 60 951 in July The New York-Chicago route was second with 103 204 lb compared with 55 752 lb for July

Increased use of the air mail has exceeded the expectations of Postmaster General New and still greater increases are expected in the future Since May the total poundage has been practically doubled each month. The reduced rate is 5 cents for the first ounce and 10 cents for each additional ounce

Company Erecting 36 Beacons

SAN FRANCISCO, CALIF—Construction is now under way on 36 Claude Neon beacons which are being erected at 50 mile intervals along Pacific highways between Canada and Mexico, according to the announcement of the Richfield Oil Co., backer of the project The development work in connection with this project is being carried on by William Cotrel of the Richfield Oil Co and Paul D Howse, president of the Electrical Products Corp

Open Field at Norfolk, Neb.

NORFOLK NEB—The new Norfolk airport has been dedicated More than 20 airplanes took part in the ceremonies Several Army planes from Fort Crook and Fort Riley were included in the group District Judge Charles H Stewart delivered the principal address

Add Land to Bismarck Field

BISMARCK, N D—Orris W Roberts, chairman of the aviation committee of the Bismarck Chamber of Commerce announces that 35 additional acres of land have been added to the airport

Army to Take Part in Albany Field Opening

ALBANY, N. Y.—A request of John Boyd Thacher, Mayor of Albany, that Army aircraft participate in the dedication of the Municipal Airport here October 3-6, has been approved by the War Department, it is reported The commanding general, Second Corps Area, Governor's Island, N Y., has been directed to furnish such planes under his control that can be spared to participate in the ceremonies In addition to these a flight of pursuit planes from Bolling Field, Washington, D C, will attend.

Among the races at the dedication will be two of 40 mi for open cockpit planes and one for the same distance for cabin monoplanes A dead stick landing contest and parachute jumping to a mark will also be among the events

The aircraft exhibit of the exposition will be divided into three sections The first will contain completed aircraft on display, the second, engines, accessories, etc, and third, a historical and educational exhibit of early flying

Entry blanks may be secured from Bob Aldrich, manager of events, Headquarters of the Albany Air-Meet and Air-Craft Exposition, 86 State Street, Room 52, Albany, N. Y.

Binghamton Concern Gives Beacons to City

BINGHAMTON, N Y.—Two 8,000,000 candle-power beacon lights have been placed here by the Binghamton Light, Heat & Power Co., so that the city will no longer be difficult to locate by night fliers who use the short route between Binghamton and Buffalo.

The big beacons, first used in connection with the air meet held on Bennett Field by Richard L. Bennett, local pilot, were placed on the roof of the power company's sub-station in the center of the city, one mile south of the landing field The company also has painted the name "Binghamton" in large letters on the roof of the sub-station, with an arrow pointing in the direction of Bennett Field

More than a score of pilot from New York and Pennsylvania were here taking part in the Bennett meet

Dodge City Dedication Plans

DODGE CITY, KAN.—Three events, a 20 mi. race for planes with 100 hp. engines or less, a 20 mi. event for planes with 200 hp engines or less and a landing to a mark contest from an altitude of 1,000 ft. with engine throttled will feature the opening of the new McCoy Field here on September 24 The meet is being sponsored by the Dodge City Chapter of the N A A. Free use of the field for passenger flights will be accorded visiting fliers.

FOREIGN ACTIVITIES

Plan Improvements On Vancouver Field

VANCOUVER CANADA—Improvements to Vancouver's temporary airport on Lulu Island, to cost $7,000, have been authorized by the Civic Air Board, according to a recent announcement The program includes preparation of a smoother runway erection of hangars and shelters and provision for a better approach from the road to the field

The supervisor of civil aviation, who has been investigating sites for a permanent airport, has selected Sea Island as the best location for a combined seaplane and land plane base. Sea Island is in the Municipality of Richmond, lying between the north arm and the main channel of the Fraser River and about the same distance from Vancouver as Lulu Island. Sea Island, however, can offer a seaplane base on the Gulf of Georgia, out of the path of shipping, and reported as less subject to fogs

The best approach from Vancouver is the route taken to the temporary airport over Granville St to Marpole and across the north arm of the Fraser river to Eburne. To reach Lulu Island another bridge has to be crossed from Eburne on Sea Island.

Record Flight is Made From India to England

LONDON, ENGLAND— Landing at Croydon Airport in the evening of September 6, Capt C. D Barnard and Flying Officer E H Elliott completed the fastest flight ever made between India and England The fliers covered the 5 000 mi distance in four and one-half days in the air They made the trip in the Jupiter powered Fokker monoplane "Princess Xenia"

This record surpasses that of Brock and Schlee, who flew the Stinson Detroiter Pride of Detroit from Croydon to Karachi, India, in seven days time last year, and also that of Bert Hinkler, who flew his Avro Avian from England to India in seven days in the course of his flight to Australia last spring

Possibilities for a five-day commercial air service between England and India were shown by Barnard and Elliott. The fliers carried a large case of tea in their plane.

Making Bermuda Survey

HAMILTON, BERMUDA — An aerial survey has been put under way at Bermuda by representatives of Imperial Airways, Ltd, of London

Unique Plane

M Ruttiens, Belgian inventor and his midget plane having special wings which he claims enable the plane to rise vertically

Canadian Line Reports Heavy August Traffic

VANCOUVER, CANADA—Demands for air service between this city, Victoria, and Seattle became so heavy during August that British Columbia Airways, Ltd, operating a tri-engined Ford plane between the cities, were forced to turn away 36 prospective passengers because of insufficient accommodations The concern is now in the market for another large passenger carrying plane.

Officers of the company have changed the schedule to allow business men of this city the best part of a full day in Victoria or Seattle. The plane now arrives in Vancouver from Victoria at 9 15 A.M leaves for Victoria 9 30, arriving 10 14, leaves Victoria 10 30 for Seattle arriving 11 30, leaves Seattle 3 P.M. arriving at Victoria 4 P.M, leaves Victoria 4 15 arriving in Vancouver at 5 P.M

Plan Dublin-Paris Line

DUBLIN IRELAND— Establishment of a regular air route between this city and Paris is under serious consideration by the Irish Free State Osmond Grattan Esmond, member for Dexford in the Irish Free State Chamber of Deputies (Dail Eireann) recently flew to Paris to discuss the plans with French aerial transport officials

U. S. Medals to Frenchmen

PARIS, FRANCE.—Lieut Dieudonne Costes and Lieut Comdr Joseph Lebrix, French aviators who recently completed a round-the-world journed flying a Berguet plane have each been awarded the American Distinguished Flying Cross.

French Company Plans Expansion

Projects in Africa, Spain and South America Are Under Consideration

PARIS, FRANCE.—Air line projects in South America, Africa, and Spain are being planned by the Compagnie Generale Aero-Postale, according to announcements recently made public The company is capitalized at 20 000 000 francs ($780 000) and at present operates the line from France to South America via Morocco and West Africa, a total distance of about 8,000 mi The plans for the future are based on the development of this line and the creation of supplementary connecting lines

The first step in the development program is the opening of the line connecting Chile and Paraguay (Copiapo and Asuncion) to Buenos Aires and the distance now covered in two days by rail will require but a few hours to traverse in planes This line is to be opened by the end of this year In 1929 the company will make atempts to connect Buenos Aires to Southern Argentina Commodoro Rivadavia by Bahia Blanca, San Antonio and Rawson If possible this line will be extended as far as Punta Arenas (Tierra del Fuego) The advisability of establishing lines will be considered from Rio de Janeiro to Sao Paulo, Brazil and from Natal to Belem, thence to Macapa, Guiana, and the Antilles if need arises

Extension Along Congo

Extensive projects are also underway in Africa First it is planned to extend the line connecting Toulouse with Dakar, French West Africa, along the coast toward the Belgian Congo. At this point the line would connect with the interior system which the Belgians have installed and which is being operated regularly The second project of the company is to cooperate with the Belgian Sabana Company to study a regular line across North Africa via the Sahara, touching Gao on the Niger River and thence to Lake Chad and via the Forest of Lamy and Archambault to reach the Belgian Congo

Vote French Air Ministry

PARIS, FRANCE—At a recent Cabinet meeting it was decided to unite civil, military, and naval aviation in one department, and Laurent Eynac, who has been Under Secretary for Air, is expected to receive the new portfolio

Pease Tracing Table

INCLUDED IN the drafting room equipment manufactured by the C. F. Pease Co., Chicago, Ill., is a glass top shadowless tracing table for use in retracing old blue prints or drawings. The table has a plate glass drawing surface 26 in. x 36 in. in size and electrically lighted from below. A parabolic reflector assures even light distribution, reducing the possibility of eye strain. The cover is hinged in front and adjustable at the rear. Lights and reflector are attached to the top, assuring the same relative position for all adjustments of the top.

By using a sheet of celluloid between glass and drawing a suitable working surface is provided for compass and divider points. Small tracings or blue prints can be attached to glass with gummed stickers. The body of the table is of golden oak and is 34 in. high. Frosted or ground glass will be furnished if desired. Adequate ventilation is provided, preventing excessive heating.

The Transcontinental Air Derbies

(Continued from page 871)

in his Stinson Junior, was the fifth to land. These pilots were the eighth and ninth, respectively, to leave Kansas City.

Two half-hour stops were made by the Class A entrants. One was made at Wichita, Kan., and the other Oklahoma City, Okla. Entry No. 60 piloted by Leslie C. Miller, did not reach Fort Worth. This plane remained in Wichita, but Pilot Miller sent word that he was still in the race for lap money. Entry No. 17, the first plane to take off from Roosevelt Field at the start of the derby, was down at Gardner, Kan., and dropped out of the race. The remainder of those that reached Fort Worth, in the order of their arrival, are Nos. 8, 51, 46, 37, 47, 67, 18, 35, 29, 21, 36, 27, 93, 53, 109, 103, 168, 26 and 104.

Kenyon First Into El Paso

The planes still in the Class A race arrived at El Paso, Tex., at the end of the fourth day, after flying from Fort Worth to Abilene, Midland and Pecos. Entry No. 51, the Challenger piloted by Theodore W. Kenyon, which was the eighth plane to leave Fort Worth in the morning, was the first to reach El Paso. Mr. Emery, in his Travel Air, came second. Mr. Dake's American Moth, entry No. 83, was the third plane to land, while Mr. Rowland arrived fourth in his Cessna model "A". All four planes were powered with Warner Scarab engines. The remainder of the planes landed at varying intervals. Of those that left Fort Worth, No. 53 crashed in making a forced landing at Sierra Blanca, and No. 118 came down near Morin, Tex.

The fifth day's racing took the fliers from El Paso to Lordsburg, N. M., Tucson, and finally to Yuma, Ariz., the fifth overnight stop. Mr. Rankin's Waco 10, entry No. 13, led the field into the municipal air port at Yuma. He was followed 10 sec. later by the Cessna model "A". The Travel Air, piloted by Mr. Emery, was third to land. Entry No. 27, another Travel Air, which was piloted by Eugene J. Detmer, was the fourth to finish. The American Moth came in fifth.

From Yuma, the last overnight stop, the entrants in the Class A derby flew to San Diego. Their order of arrival there was a bit different than it was when they landed at Yuma the night before. Upon receiving word to start from the officials in charge of the air races at Los Angeles, the twenty-three planes took off for Mines Field. Most of them completed this leg of the race in less than an hour. The Cessna monoplane, piloted by Mr. Rowland, was the first to finish. He crossed the line at 2:34 P. M.

The Class B and Class C transcontinental air derbies, which were scheduled to start the day after the 37 planes in the Class A event took off, were delayed for 48 hours by extremely bad weather. However, Saturday, September 8, dawned with a cloudless sky, and the starters in the Class B race were sent off at 7:18 A. M. No sooner had the planes gotten out of reach than a report was received at Roosevelt Field announcing that there was a

J. H. Livingston in his Class B entry, a "Whirlwind" tapered wing Waco

thick fog lying over Pennsylvania. The first weather reports had been garbled. As a result, the entrants in the Class C derby were not started until after 11:00 A. M., when it was reported the fog had lifted.

The entrants in both the Class B and Class C races made fourteen stops between New York and Los Angeles, following the same general route as the Class A planes. The first stop was McKeesport; the second, Columbus, and the third, Terre Haute, where the planes remained over night. The next day the entrants flew to St. Louis, Kansas City, Wichita and Oklahoma City, which was the second overnight stop. The first control city reached on the third day was Fort Worth. Midland was the second stop, and El Paso, where the entrants remained over night, was the last. Tucson and then Yuma were the cities scheduled the next day. On the last day the planes were scheduled to fly to San Diego and to Los Angeles.

There was dissension among those entered in the Class B race, which was for planes with engines of between 510 and 800 cu. in. piston displacement, when four of the Waco planes and two Laird planes were viewed for the first time by the other pilots. It was said that these six planes were "special jobs" and not production models, such as are called for in the race rules. However, the trouble was smoothed out and 20 of the entrants took off.

The race numbers, types, engines and pilots of the 20 planes are given below. In the order in which they took off they are as follows:

Number	Plane	Engine	Pilot
49	Buhl Airsedan	Whirlwind	Lee F. Schoenhair
39	Laird LC-R	Wright J4B	C. W. Holman
81	Waco 10	Whirlwind	S. F. Auer
45	Travel Air	Whirlwind	Paul R. Braniff
97	Cessna Model A	Cessna Anzani	G. C. Quick
95	Waco 10	Whirlwind	John H. Livingston

Number	Plane	Engine	Pilot
41	Fairchild	Whirlwind	M. W. Whitehall
114	Waco	Whirlwind	John P. Wood
200	Lockheed Vega	Whirlwind	Erold Bahl
40	Laird LC-R	Wright J4B	E. E. Ballough
23	Waco 10	Whirlwind	C. W. Mayse
59	Travel Air	Whirlwind	Leo Nomis
96	Cessna monoplane	Whirlwind	E. Schultz
186	Lockheed Vega	Whirlwind	B. H. Shaw
106	Travel Air	Whirlwind	T. A. Wells
110	Pacer monoplane	Whirlwind	Ive McKinney
52	Cessna monoplane	Whirlwind	J. Warren Smith A. Litzenberger
100	Cessna model B	Whirlwind	J. Sodowsky
79	Waco 10	Whirlwind	Charles Meyers
154	Ryan B-1	Whirlwind	R. J. Merritt

John H. Livington, piloting his Whirlwind powered Waco 10, led the Class B racers into Terre Haute. He was followed by Ed Schultz, piloting a Cessna monoplane, powered with a Whirlwind. Entry No. 52, another Cessna monoplane, which was piloted by A. Litzenberger, was the third plane to land. The others, in the order of their arrival, were 49, 59, 100, 114, 79, 40, 106, 150, 23, 110, 45 and 41. The Laird LC-R piloted by C. W. "Speed" Holman, was forced down at Harts Mill, Pa. In making a landing the plane nosed over and the propeller was damaged to such an extent that Mr. Holman was forced to drop out of the race. Entry No. 200, a Lockheed Vega, caught fire in the air and landed at Brooksville, Pa. This plane also was forced to drop out. Entry No. 81 was forced down at Brookside, O., and No. 186 made landings at Wheeling, W. Va., and East Liverpool, O.

The other Laird LC-R entered in the race, which was piloted by E. E. Ballough, led the Class B fliers when they landed at Oklahoma City at the end of the second day. As a passenger, Pilot Ballough carried Charles Dickinson, 71 years old, of Chicago. Entry No. 114, a Whirlwind powered Waco, piloted by John P. Wood, was the second plane to reach Oklahoma City. Mr. Wood was followed by John H. Livingston, who was flying a Waco 10. Entries Nos. 79, 106 and 49 were the next three to land. The remainder of the Class B fliers landed at varying intervals, with the exception of entry No. 81, a Waco 10, piloted by S. F. Auer. This plane landed at Wichita and remained there over night.

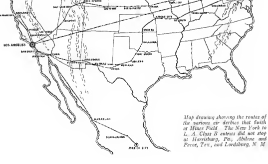
The Class C derby was for planes with engines of more than 800 cu. in. piston displacement. There were but four entries in this class. They were as follows:

Number	Plane	Engine	Pilot
12	Fokker Universal	(Note Spec.) Wasp	E. J. Brooks
22	Lockheed Vega	Wasp	R. W. Cantwell
107	Cox-Klemm	Liberty	I. K. McWilliams
143	Fairchild	Wasp	C. D. B. Collyer

Entry No. 22, the Lockheed Vega, powered with a Pratt & Whitney Wasp engine, was the first of the Class C entrants to land at Terre Haute. Besides Pilot Cantwell the plane carried E. F. Schlee, famous round-the-world flier, and Erle P. and John C. Halliburton. William S. Brock, who was with Mr. Schlee on his well-known flight, was a passenger in entry No. 12, the Fokker Universal, which was piloted by E. J. Brooks. This plane was the second to land. The Fairchild cabin monoplane, "The City of New York," which Capt. C. B. Collyer used in establishing the 23-day globe-circling record, was the third of the Class C planes to land. Captain Collyer was the pilot. The Cox-Klemm-Liberty, piloted by I. K. McWilliams, was forced to remain at Columbus on accout of engine trouble.

The Lockheed Vega, the Fokker Universal and the Fairchild were in the same position at the end of the second day's run, which finished at Oklahoma City. The engine trouble, which delayed the Cox-Klemm-Liberty plane at Columbus, was repaired and it was flown as far as Wichita. There it was definitely withdrawn from the race.

The Laird LC-R piloted by Mr. Ballough, was the pace-maker for the Class B planes on the leg from Okla-



Map drawing showing the routes of the various air derbies that finish at Mines Field. The New York to L. A. Class B entries did not stop at Harrisburg, Pa., Abilene and Pecos, Tex., and Lordsburg, N. M.

homa City to El Paso, the third day of the race. The Laird made the flight in less than five and one-half hours, including the stops, at Fort Worth and Midland, which are required by the rules. In the Class C derby, Mr. Cantwell's Lockheed Vega was the first plane to check-in at El Paso, which likewise was the third overnight stop for these planes. He was followed in by the Fokker Universal and the Fairchild, "The City of New York." As AVIATION goes to press, the Class B and Class C planes are flying the next to the last leg of their respective races.

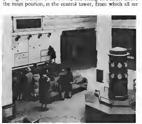
The Croydon Airport

(Continued from Page 869)

the left, passing directly out to the field. Incoming passengers enter it at the right from another room in which the customs examination takes place. Like the immigration inspection room, this was constructed with an eye to the future and so is larger than present traffic warrants.

The upper floor of this part of the building is divided up into offices, wherein are housed the officers of the airport administration, and where some of the air line officials also have taken space. The right and left wings of the buildings contain a series of storerooms, where bonded goods may be held. Offices, for the officials concerned, are maintained here also.

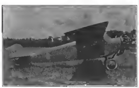
In the center of the airdrome side of the building, projecting out from it somewhat, and rising two floors above the main position, is the control tower, from which all air



The waiting room in the Administration Building at Croydon, showing passengers viewing the weather map

traffic within British boundaries is controlled. Surmounting it is the radio mast supporting one of the three direction finding aerials, which are used to give planes their bearings in bad weather.

South of the administration building, lie the hangars. They are of steel and concrete construction, providing 90,000 sq. ft. of floor space. Each hangar is equipped with an overhead crane capable of lifting 4,000 lb. to facilitate repairs, the removal of engines, and so forth. Other buildings, workshops, and storerooms, are situated behind the hangars. Pavement is provided in front of the hangars, on which the planes can taxi to and from the administration building. The Aerodrome Hotel, just



north of the administration building, completes the list of Croydon buildings While not large, it is higher than the other structures Otherwise, its appearance conforms with that of the other buildings. Its advantageous location may make it a meeting place of the "air-minded" of London

London's new airport was officially opened on May 2 by Lady Maud Hoare, in the presence of officials of the British Air Ministry, and officials of British and foreign plane operating and manufacturing companies. It takes the place of the old Croydon airport, which is included within the boundaries of the new field. The old buildings are almost in the center of the new field, but are being torn down rapidly. Soon there will be nothing to break the large expanse of smooth, grass-covered ground.

The new arrangement was necessitated by the great growth of air traffic in and out of Croydon. In July 1927, 1,400 passengers passed through the aerodrome in one

The Administration Building at Croydon Airport, showing the control tower.

week. In the same year, goods valued at $6,250,000 were imported by air while the value Great Britain's exports by air was $7,250,000

The airport is under the direction of the Air Ministry, and a rental fee is paid by the five airlines which operate from it. These airlines are the British Imperial Airways, Luft Hansa, K L M, Sabena, and French Air Union. Each of these companies has its own offices and hangar space, and maintains its own ground force and maintenance crew.

The operation of the airport is entirely in the hands of the Air Ministry It controls the landing and take-off of planes, and furnishes information to airplanes en route, with which constant radio communication is maintained The control room proper, located on the top floor of the control tower, is about 30 ft square It has windows on all sides, and is surrounded by a balcony. The room is divided in two by a glass partition. In one section is the radio apparatus, the other is the office of the traffic officer

A traffic officer is on duty at all times while planes are flying any of the routes under British control And at all times, one is close-by, ready to be called, should a plane arrive at the airport unexpectedly. This officer has a large steel map showing those portions of the routes, which are under British control The radio operators keep him advised of the positions of all aircraft on these routes, and he is able to plot the positions on the map by using small magnetized arrows, each bearing the identification mark of a particular plane When visibility is bad, he can warn pilots of two machines, which are approach-

New Plant of the Spartan Aircraft Company six miles northeast of Tulsa. Accurately reproduced from a photograph taken August 19 1928.

ing dangerously close to each other, that such is the case.

The traffic officer receives all weather reports at the same time, and is in direct communication with the meteorological office so that immediate replies can be had to special inquiries. The planes fly in almost any sort of weather. The pilot has the latest weather reports before starting. He is then left to fly his own course, but he can, and frequently does, ask directions as to the course and altitude to fly to obtain the most advantageous weather

A traffic control officer standing beside the steel route map in the control office

conditions. In the event a pilot loses his bearings, his signals are picked up by three radio stations, including that at Croydon and his position is soon calculated and given him.

From the balcony outside of the control room, the operation of planes on the airport is controlled. A plane, which is ready to take-off, signifies the fact by removing the blocks from the wheels. When a colored metal disc is displayed from the balcony, and the plane taxies into position for the start. If everything is clear, a light is displayed and the plane takes-off.

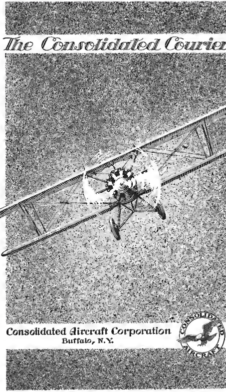
The prevailing wind at Croydon is southwest. As the buildings are situated at the northeast corner, planes need not take-off over them. Furthermore, the run in this direction is considerably in excess of 1,400 yd. Although no night flights are scheduled from the airport, it is provided with landing lights. A flashing signal, by which the pilot can recognize the Croydon airport, is located at the southern end of the hangars.

Croydon airport appears to possess every advantage except nearness to the city. However, the difficulty of getting to and from London has been overcome in a way satisfactory to the passenger. Luxurious automobiles are waiting for the passengers when they have passed customs, to take them and the baggage to London.

The Guggenheim Airway Meteorological Service

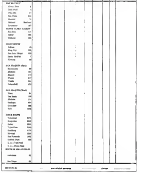
(Continued from page 867)

the scattered hills. The ceiling was not high enough to fly under the fog, and, at the same time, clear the hills. But, as is practically always the case in central California, from one of our stations came a report that there was a hole in the fog. It might have been Palo Alto that reported the break, or it might have been San Jose. This shows it is only by means of a dense network of stations



that it is possible to report such local variations, which are so important for safe flying.

On two occasions, when the area south of the Tehachapi Mountains was completely shut in by dense fog formed in a layer 2,000 ft thick or more, planes stopping at Bakersfield were told the exact conditions over the entire area. Ground signals were displayed there also, asking planes not intending to stop, to come down for weather reports concerning Los Angeles and the vicinity. This saved the air lines many minutes in the air, for doubtless the planes would have cruised around over the fog for some time before finding a hole. If the pilots did find a hole, they would have been hemmed in probably by the hills. The ground stations, observing the fog below, reported the exact conditions, making it possible for the pilots to find a break easily, with the feeling that once down through the hole, the flying would be without dangers, thanks to the accurate reports.



One of the "Weather Reports for Pilots" issued by the Guggenheim Meteorological Service

In addition to reducing flying hazards to a minimum, the Experimental Meteorological Service is helping the transport companies to cut down operation costs and to maintain their schedules. This is made possible by pilot balloon observations, which give the pilots the wind directions and velocities at various levels. By means of this, a pilot of a southbound plane, for instance, can know that he will have a good tail wind at 9,000 ft whereas, 1,000 ft up or down would mean strong head winds.

The Guggenheim Fund has established three pilot balloon stations in the area covered by the meteorological service. They are located at Lebec, Fresno and Hollister. In addition to these stations, the U. S. Weather Bureau takes pilot balloon observations at the Oakland Municipal Airport and at Los Angeles. All pilot balloon stations

usually take three observations daily and, wherever possible, the hours of these observations are arranged to fit in with schedules of the airlines.

At the terminal stations, and at the other points where the complete network reports are received, the complete weather information is given to the pilot in typewritten form, so that he has the information before him at all times while in the air. In addition, the data is posted on bulletin boards at the airports for the information of individual pilots, who desire either local or widespread weather data. For each report a map is arranged to show the distribution of such phenomena as fog, together with the wind direction and velocity. The cloud forms, ceiling and temperature are also indicated on this map. The base used for the weather map is a photographic reprint of a relief model of the state. In this way, the relation of relief to weather conditions is brought out clearly, a matter of considerable importance in this area.

To Conduct Present Service for One Year Only

This experimental service is to be conducted for one year by the Daniel Guggenheim Fund. At the end of that time its fate will be in the hands of the federal government. If it proves successful, it is the hope that the Government will continue it, and will establish other similar airway meteorological systems throughout the country. Judging from present indications, it will prove successful. The service has received unsolicited praise from every pilot served by it. As a result, a great demand for weather information has been created.

When the experimental year is up, the air transport companies and pilots will be loath to return to the old inadequate way of getting weather reports. It then will be up to the government to see that a service of this kind is continued. The experiment so far has been handicapped through a lack of bad weather. Strange as it may seem, those in charge of the service are wishing for bad weather, not that they wish to make it hard for the pilots, but because they want to put the service to a real test and watch the results. Then, it will be easier to judge whether or not the experiment is a success.

That the importance of weather conditions to aviation is beginning to be realized both by meteorologists and those connected directly with the industry is shown by the interest the U. S. Weather Bureau is taking in the Guggenheim service. Arrangements now are being made for the weather bureau personnel to operate the administrative part of the service, and to collect the reports. A series of stations has been set up by the bureau in northern California, and the area served by the Guggenheim Fund in the daytime, is served by the weather bureau with its stations at night.

Offers Nucleus for Building Government Service

With the service showing such promise, it is not improbable that there is a nucleus, around which the United States can build up a weather service for airways, equal to if not better than the best aeronautical meteorological organizations in Europe.

Perhaps one of the greatest opportunities the service offers to aviation, and to the general science of meteorology, is in its possibilities for practical research. Already, considerable knowledge concerning the summer sea fogs on the California coast has resulted, and accurate methods of forecasting, combined with intelligent information concerning the distribution of fog, are being developed. When the more hazardous winter weather phenomena become prevalent, additional opportunities for the studies of this kind will be afforded.

Through studies of weather reports, it has been learned

that fog in central California comes in from the sea through two principal breaks in the coast ranges—the Golden Gate and Monterey Bay The Colma gap and the the Visitacion Valley gap, south of San Francisco, also admit fog into the San Francisco Bay region Elsewhere owing to abrupt ranges rising up from the sea, the fog is confined to the ocean shore But when the fog once gets through the low breaks, it spreads itself out behind the hills for a surprisingly great distance. In spreading out, it chiefly parallels the coast, for a secondary range from 15 to 30 mi inland, prevents its spread into the interior valleys The distance from the Golden Gate to Monterey Bay is nearly 100 mi Over all this distance, the fog is able to spread itself out behind the mountains bordering the ocean shore The two streams of sea fog meet approximately midway between the two gateways, with the result that from San Francisco Bay to Monterey Bay, there is a continuous layer of fog, through which the coast hills and secondary ranges lift their backs, so that they appear as islands In addition to the two streams of fog stretching out to meet each other, they also pour forth in opposing directions, with the result that from the two comparatively small entrances through the coast ranges, an area of fog, extending north and south for 200 mi fills the coastal valleys, as well as clings to the hills along the ocean shore.

By means of the weather reports, the trained meteorologists, in charge of the work of the service, are able to tell the pilots where the fog is likely to break first Thus it is possible to guide planes to the center of the Santa Clara Valley to the meeting place of the two fog streams where it has been found, owing to comparative dryness of this valley and distance from the distribution points the fog breaks up first Or, the pilots wanting a breaking point nearer at hand, the weather men can tell them that in the southwest portion of the bay is the point where the fog will break up next This is probably due to the location on the leeward side of the coast hills, where there is little likelihood of the fog piling up to any extent

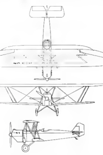
The "New Standard"

(*Continued from page* 865)

bodies several original ideas The tail skid assembly is of welded steel tube construction and consists of a double forked mounting member to which is pivoted a bowed vertical member carrying the contact shoe on its lower end These two units are held in tension by a rubber cord wrapped around them near the upper ends The steerable mounting is hinged at two points to a vertical supporting member in the fuselage structure and is controlled from the rudder bar by means of cables running parallel to the rudder control cables A section of rubber cord is inserted in the tail skid control cables so that the landing shock will not interfere with the rudder control Possibility of such interference is also minimized by the position of the contact shoe which is in direct line with the steering hinges The entire unit may be removed from the plane for rewrapping or repair by taking out the two hinge pins Stops are provided so that the tail skid will not make a complete revolution

The passengers' cockpit is entered through small doors on either side and, being 38 in. in width, accommodates four passengers easily The rear seat extends the full width of the cockpit and the front seat is divided, making it possible for all passengers to face forward Cabane struts are so placed as to be an aid rather than a hinderance in entering and leaving the cockpit and wide walk-

ways are provided to preclude the possibility of accidental damage to the wing covering by passengers. A streamlined sheet duralumin cover is provided for the front cockpit and is designed to slide back over the opening



A three view drawing of the Gates-Day "New Standard."

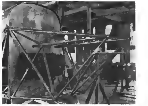
when the plane is used for carrying express or mail. When using the plane for training purposes the forward portion of the cockpit can be enclosed by fastening the cover at the half way point in its travel. A considerable

A portion of the uncovered wing of the "New Standard," showing the method of securing the internal brace wires

increase in speed has been noted when the cockpit is completely covered.

All controls, including booster, adjustable stabilizer and Lunkenheimer valve, are situated in the rear or pilot's cockpit. Instruments required by the Department of Commerce are supplied and include a standard Consolidated unit panel and a separate air speed indicator. Fuel lines from the two wing tanks, which have a combined

capacity of 56 gal, are led to the Lunkenheimer valve which is placed under the instrument board on the right side of the cockpit. Each gasoline tank is fitted with a Boston guage in full view of the pilot. The booster control is mounted on the right side of the pilot's seat and the throttle is on the left side of the cockpit. Conven-



A view of the engine mount of the "New Standard."

tional stick and rudder bar control is employed and duals may be installed in the forward cockpit when the plane is to be used for training purposes. In the production planes it is planned to use du Pont Fabrikoid upholstery. Because of the position of the wings there is exceptional visibility from both cockpits. There is nothing to inter-

A picture showing the method of guiding the control wires on the "New Standard."

fere with the passengers' vision downward and the pilot is able at all times to note the condition of the landing gear.

Rigid tubes and cables are used throughout the control system which has been designed so that all use of pulleys has been eliminated, fair-leaders being employed at the points where it is necessary to change slightly the direction of the cables. Full differential action, 14 deg. downward and 27 deg. upward, is obtained in the aileron control, which is a combination of rigid tube and cables. The cables are used in the part of the system which is enclosed in the lower wing. Universal joints are necessary to attach the control tubes to the ailerons because of the angu-

larity of the tubes and the position of the aileron in the tapered portion of the wings A combination of tubes and cables are employed for the elevator control The stabilizer is adjustable in flight through a push-pull rod actuated by a lever at the left of the pilot's seat

Units of the empennage are constructed entirely of duralumin with the exception of the stabilizer which is built of wood and covered with fabric. Fin, rudder and elevators are built of standard duralumin sections, riveted together in the same manner as the fuselage and covered with duralumin sheets Several different thicknesses ranging from .016 to .049 in are used and all metal entering into the construction is heat treated Two steel tube struts, attached to the lower longerons, support the stabilizer on each side and are so fastened as to permit of its adjustment All bolts are of chrome nickel and fittings throughout the plane are of 1025 and chrome molybdenum steel

A picture showing the construction of the horizontal stabilizer and the elevators of the "New Standard"

The specifications as submitted by the manufacturer are as follows:

Length overall	26 ft.
Height	11 ft.
Span (upper wing)	45 ft.
Span (lower wing)	32 ft., 6 in.
Seating capacity	5
Dihedral (upper wing)	0 deg.
Dihedral (lower wing)	2 deg.
Incidence (both wings)	0 deg.
Stagger	26½ deg.
Gap	72 in.
Chord (upper wing)	70 in.
Chord (lower wing)	50 in.
Wing area (including ailerons)	350 sq. ft.
Stabilizer and elevator area	40 sq. ft.
Fin and rudder area	16 sq. ft.
Weight with water	1600 lb.
Disposable load	1305 lb.
Power plant	180 hp Wright-Hispano
Wing loading	8.3 lb. per sq. ft.
Power loading	16 lb. per hp.
High speed (full load)	115 m.p.h.
Cruising speed (full load)	95 m.p.h.
Landing speed	35 m.p.h.
Climb	800 ft. per min.
Service Ceiling	16,000 ft.
Fuel supply (full throttle)	4 hr.
Disposition of load	
Pilot and 4 passengers	850 lb.
Fuel	332 lb.
Oil	20 lb.
Baggage, etc.	100 lb.

SIDE SLIPS

By Robert R. Osborn

Reports en route to Los Angeles by Side Slip's Special Correspondent (annual apologies to Mr Ring Lardner).

* * *

Dear Mr Editor I know it must come as a complete surprise to you an the boys in the office to find I am on my way to the Air Show at Los Angeles on account you saying I should maybe stay an run the office wile you went out But I finely come to the conclusions I owed it to my public to cover the Races, so I made the great sacrifice an come anyway. I knew you wouldn't mind this on account it being best for the magazine anyway and once again it is only my great devotion to duty for which I am so justly famous A no of the boys on the train is also on their way to the Races but they has been doing some rehearsing for the social side of the affair an I can't be quite sure who they are as yet Last eve a no of them gathered together for the purposes of showing me how poker is played, so the expenses of this trip will not be as great as first estimates on account their contributions to the good cause.

This afternoon a while the engineer of this train, which is a nice fellow name Fred leave me ride in the golden chair with him in his cab He sits side-by-side with his fireman but they is only single control. He let me have the controls while we was running cross-country but didn't let me make no take offs or landings Offhands the thing seems to have a cross between the old Curtiss an Dep controls an the engineer got pretty wild on account I trying to hold right rudder on a pedal in the floor an thereby emptying all his non-skid sand out on the road I tell you these fellows has to be pretty good as we run into some pretty thick weather and squalls an was right on our course all the time, in spite Fred having to do all his navigating with a pressure gauge an a bank-an turn indicator they has jokingly nick named a water bottle

A course I can't tell you much about the Races or exhibits as yet, I not being near the place When I arrive I ll try an give the readers a true picture of how aviation an civilization is progressing an to that end will have to travel incognito to keep my vast no of admires from folling me around. As some of your readers may be of the lay mind I will exclaim that travelling incognito is to do like the prince of Wales does when he visits America or Chicago, so address all of my telegrams to Lord Renfrew

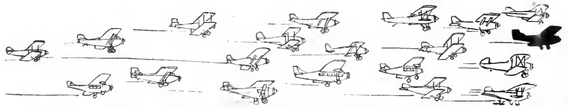
I understands from my geographies in school and from the real estate agents about California being always sunny an we all know it always rains an snows an hails enduring the annual air races, so the naked truth regards California weather will be broadcast to the readers of AVIATION in this column. Order your copies early

Y'rs V y Tr'ly

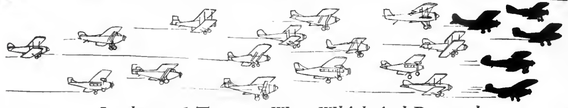
The Intrepid Aviator

Again—
the Ford Tour proves that

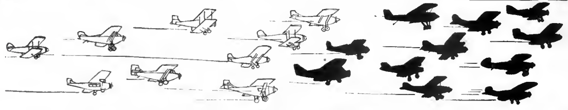
and more



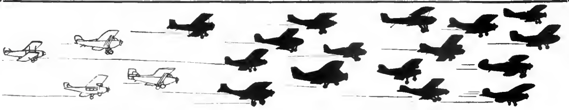
In the 1925 Tour—1 Plane Was Whirlwind Powered



In the 1926 Tour—5 Were Whirlwind Powered



In the 1927 Tour—11 Were Whirlwind Powered



And in the 1928 Tour—16 Were Whirlwind Powered

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